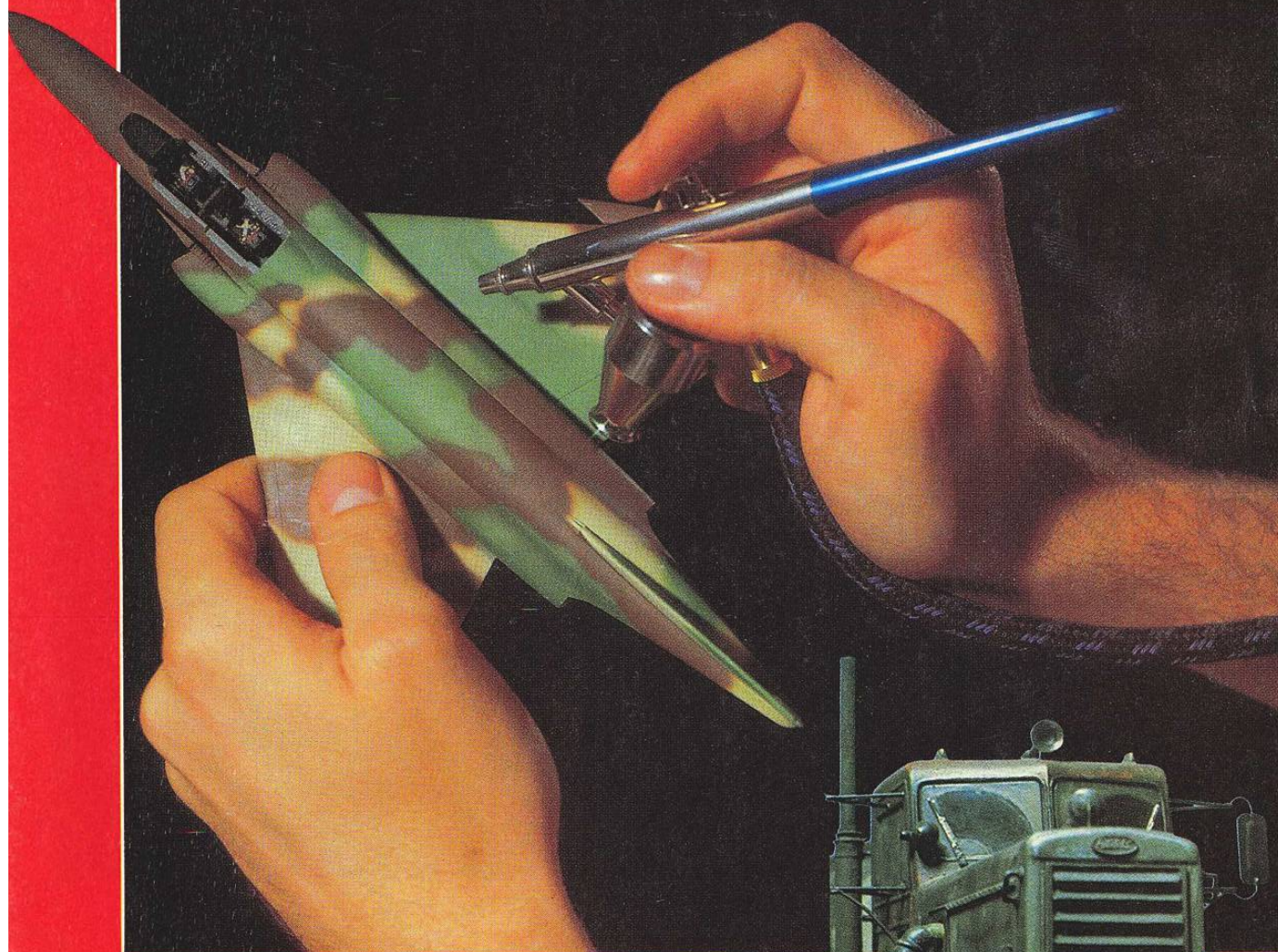


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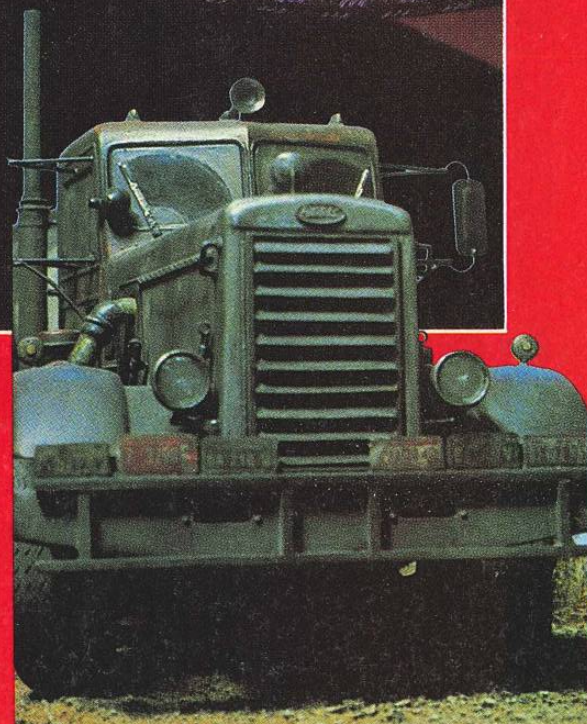
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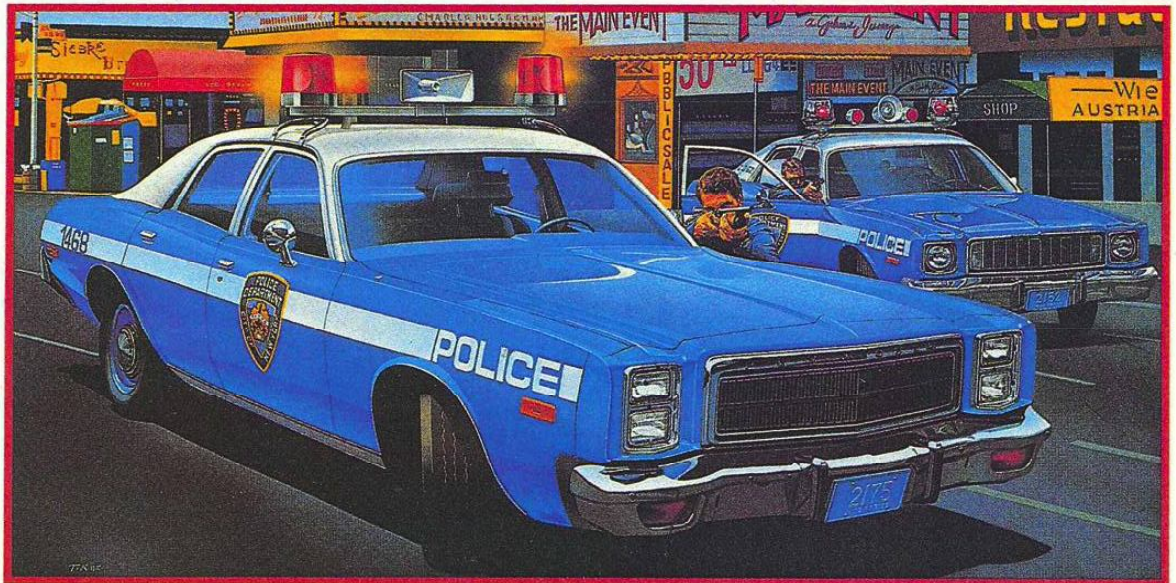
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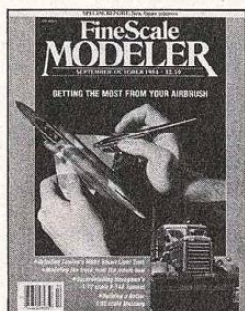
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ON THE COVER

For many of us, acquiring and learning to use an airbrush represents a watershed in modeling technique. In the article that begins on page 38, Associate Editor Paul Boyer discusses the basics of airbrushes and airbrushing, then goes on to pass along dozens of helpful hints he's developed in years of using these essential modeling tools. And even if you're not interested in trucks, you'll find Jim Stephens' story on how he built a 1/25 scale model of the truck from the TV movie *Duel* (page 46) full of useful construction and finishing techniques. Photos by FSM Staff Photographer Paul A. Erler and Shep Paine.



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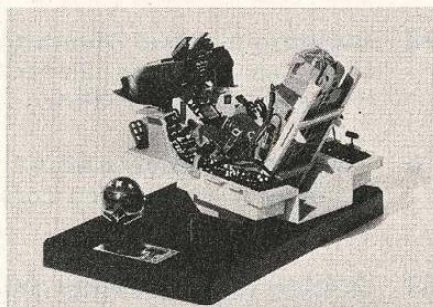
FSM UPDATE

FSM invites manufacturers and publishers to submit news releases, photos, product samples, and new catalogs. A description of our new-product announcement and review policies is available from FSM Update, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233.

New price. Effective with this issue, the cover price of FSM is \$2.50 (\$3.00 outside the U.S.). U.S. subscription rates are now \$12.50 for 6 issues and \$23.00 for 12 issues. Outside the U.S., a 6-issue subscription is \$15.50 and a 12-issue subscription is \$29.00.

Kit releases. Falcon Industries, P. O. Box 10-213, Wellington, New Zealand, has announced the release of a 1/72 injection-molded Douglas F3D-2 Skyknight with two decal options. Send \$7.95 plus \$1.00 postage. Falcon plans to introduce a 1/48 He 162 in September.

International Hobby Corp., 350 East Tioga Street, Philadelphia, PA 19134, now distributes the ESCI line of plastic kits.



New to the ESCI line are two 1/12 cockpit kits, one for an F-16 and the other for an F-104. Each superdetailed kit sells for \$14.98.

Model Rectifier Corporation, 2500 Woodbridge Avenue, P. O. Box 267, Edison, NJ 08817, is selling Tamiya's 1/12 Suzuki RG250I, No. 1429, as well as a 1/24 Honda Ballade CR-X, No. 2445.

New kits from Monogram Models, Inc., 8601 Waukegan Road, Morton Grove, IL 60053-2295, are No. 2244, 1/24 Coors Thunderbird Grand National race car; 2245, 1/24 Budweiser Monte Carlo SS Grand National race car; 5431, 1/72 F-105G Wild Weasel; 5435, 1/72 Grumman EF-111 Raven; 5810, 1/72 SR-71 Blackbird; 6062, Heritage Edition 1/72 F7F Tigercat; and 6063, Heritage Edition 1/72 F-82 Twin Mustang.

Twentieth Century Imports, 4732 East Pearl, Boulder, CO 80303, is importing from Japan six new Votoms series science-fiction character kits manufactured by Takara. Available are No. 444006-7, 1/24 ST-Turtle, \$14.00; 444011-0, 1/35 Marshydog, \$6.00; 444013-4, 1/35 Snapping Turtle, \$6.00; 444016-0, 1/35 Di-Beetle, \$6.00; 444019-5, 1/48 Scopedog, \$3.50; and 444020-1, 1/48 Marshydog, \$3.50.

The newest 1/72 release from 299 Models, P. O. Box 55232, Seattle, WA 98155, is No. 017-1, B-17H/SB-17 and PB-1W, a conversion kit for the Hasegawa/Minicraft B-17G. Enough parts are included for two complete airplanes. The kit costs \$7.00 postpaid in

the U.S. and \$8.00 postpaid outside the U.S. European orders can be obtained from Julian Edwards, 19 Larchwood Glade, Camberley, Surrey GU 15 3UW, England.

Decals. Latest releases from Krasel Industries, Inc., 919 Sunset Drive, Costa Mesa, CA 92627, include four Microscale decal sheets for 1/48 Navy Phantom IIs. Sheet No. 48-207 has markings for an F-4J of VF-74 and an F-4B of VF-84. F-4Js of VF-11 and VF-21 are featured on sheet 48-208. More colorful F-4Bs of VF-102 and VF-103 are on sheet 48-209, and sheet 48-210 has F-4Js of VF-33 and VF-92.

Paints and adhesives. New from Krazy Glue Inc., 53 West 23rd Street, New York, NY 10010, is Krazy White Glue, a non-porous adhesive for use on paper, wood, or cloth.

Model Rectifier Corporation, 2500 Woodbridge Avenue, P. O. Box 267, Edison, NJ 08817, has introduced MRC-Tamiya polycarbonate paints. Each 3/4-ounce bottle, \$2.98, has a wide mouth and color-coded cap. Twelve colors are available.

Figures. Molds for Highlander drum and pipe marching figures are available from Castings, P. O. Box 3482, Longwood, FL 32750. The silicone rubber molds for 54 mm figures sell for between \$11.00 and \$15.00; a set of eight molds is \$86.00. Each kit comes with a color and painting guide and suggested groupings.

Rafm Company Inc., 19 Concession Street, Cambridge, ON, Canada N1R 2G6, has announced the release of more than 40 new items in its "Paladins and Plate" series. Prices range from \$2.50 to \$4.50. Rafm explains that this series "expands the medieval figures by filling the heavy plate gap at the end of the medieval and the beginning of the Renaissance periods." Rafm also has released 13 figure packs in its "Flint and Feather" series, with prices ranging from \$1.25 to \$6.00. This series represents figures from the North American French-Indian wars of the 1700s.

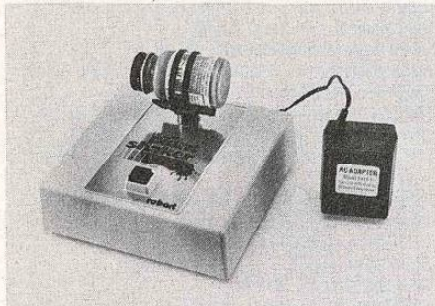
Accessories and diorama materials. Electrified Visuals, 1660 Sutter Street, No. 304, San Francisco, CA 94109, sells portable fluorescent lighting units suitable for dioramas. The company will send a price quote upon receipt of a description of how and where you intend to use the lighting unit.

"S"cenery Unlimited, 310 Lathrop Avenue, River Forest, IL 60305, has added 1/64 cast-metal, unpainted machinery to its line. Items available include No. 316, cable reel, \$3.95; 317, small electric motor, 95 cents; 318, large electric motor, \$1.10; 319, two-wheel skid, \$1.35; 320, heavy-duty drill press, \$2.65; 321, tabletop lathe, \$2.25; 322, 28" wire drum, \$1.25; and 323, shop table vise, 75 cents. Also new are 1/64 cast-metal pigs. The pigs sell for 50 cents each, or \$1.00 for a set of two, one standing, one sitting. Add \$2.50 for postage on all orders.

Tools. Freedom Electric Company, Route 6, Bethel, CT 06801, has introduced the "R Series" flexible shaft machine, available in benchtop and hang-up models with a choice of foot-operated variable speed controls or manual controls. More information is available in catalog No. 280.

A 22-piece set of small tools in a plastic case, product No. H833, has been added to Maxon/Mascot Precision Tools' line. Included in the tool set, \$27.95, are five taps, nine tap drills, three flat and two Phillips screwdriver blades, a double-end pin vise for the drills, a handle for taps and screwdriver blades, and a flexible shaft extender. For more information, write to Maxon/Mascot, Carlstadt, NJ 07072.

The Hobby Paint Shaker from Robart Manufacturing Co., 310 North Fifth Street, St. Charles, IL 60174, mixes 1/4-, 1/2-, 3/4-, 5/8-,



or 1-ounce bottles of paint. Shown is model No. 411, 110-volt AC powered, \$29.95. Also available is model No. 410, powered by four batteries, \$19.95.

New from Swingline Inc., 32-00 Skillman Avenue, Long Island City, NY 11101, is an electric glue gun, \$14.99. The glue bonds within 60 seconds, adheres to porous and nonporous surfaces, and is nontoxic and nonflammable, according to Swingline.

Temrex, 112 Albany Avenue, P. O. Box 182, Freeport, NY 11520, is selling the Neivert Whittler, a sharpening tool, for \$27.75. The five-sided tool is made of tungsten carbide.

Catalogs. The new catalog from American Industrial Models, Box 165, McConnellsburg, PA 17233, sells for \$5.00 postpaid.

Brett-Guard Division, Freedom Electric Co., Route 6, Bethel, CT 06801, has ordering guides for table and band saw safety guards, as well as a complete catalog of Brett-Guard products. Publication No. B-29NR is free.

Send \$1.00 to Classics Guild, 9903 Santa Monica Boulevard, No. 119, Beverly Hills, CA 90212, for a 32-page catalog of kits of ships, planes, cars, motorcycles, and military armor, as well as tools and supplies.

For a list of available products, send two International Reply Coupons to Croydon Impex, 6 Waid Terrace, Farm Road, Anstruther, Fife KY10 3EZ, Scotland. Croydon Impex's product line includes Roodecals, Hobby 2000 Belgian Air Force decals, Aero-club white-metal ejection seats, and Contrail vacuum-formed kits.

Publication No. 281NR, a free four-page brochure listing fractional horsepower motors, tool kits, speed controls, and handpieces, is available from Freedom Electric Company, Route 6, Bethel, CT 06801.

Send \$1.00 to Arthur S. Green, 485 South Robertson Boulevard, Suite 5, Beverly Hills, CA 90211, for a copy of his Figure Casting Metals brochure and Metals for Casting Figures catalog.

Moody Tools, Inc., 42-60 Crompton Avenue, P. O. Box 230, East Greenwich, RI 02818, has published brochure No. 835-M,

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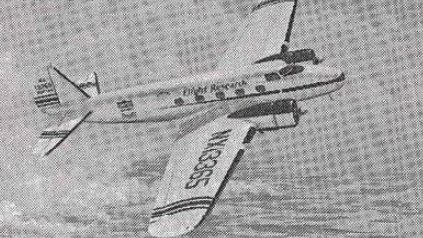
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DOUGLAS WORLD CRUISER

1984-1985 New Figure Releases

This special report was compiled from information provided by figure manufacturers. Prices and release dates are projected and subject to change. Catalog prices, when listed, include postage.

ARTISTIC ENTERPRISES

9 Winston Crescent, Whitby, ON, Canada L1N 6A3
Catalog free

15 mm

150-piece painted armies, Aug., \$300.00

15 mm-25 mm

Unpainted model soldiers, Jan. 1985

25 mm

150-piece painted armies, Aug., \$450

30 mm

Single painted foot figures, \$6.00

54 mm

Painted foot figures, June, \$30.00

Painted mounted figures, June, \$60.00

Toy soldiers with upgraded paint jobs, June, \$5.00 foot, \$10.00 mounted

Group of ten painted figures (on wooden bases) from ancient Egypt to modern day, Oct., \$340.00

Group of ten painted figures (on wooden bases) in French Napoleonic uniforms, Jan. 1985, \$340.00

Unpainted model soldiers, March 1985

Group of ten painted figures (on wooden bases) of the British Army, April 1985, \$340.00

BENASSI'S CHOICE

55 St. Mungo Avenue, Glasgow G4 0PL, Scotland
Catalog \$2.00

75 mm 30 Years' War/E. C. W., 1620, June, £6.50

75 mm Italian Army officer, 1943-1945, Aug., £6.50

88 mm WWI German pilot, Sept., £9.95

105 mm medieval man-at-arms, 1400, Oct., £12.95

BLACK HAWK HOBBY SUPPLY

14225 Hansberry Road, Rockton, IL 61072

Send SASE for catalog.

15 mm 7 Years' War, \$2.50

15 mm Mexican-American War, \$2.50

20 mm Vietnam part 3, Aug., \$2.50

20 mm Vietnam vehicles, Aug.

DRAGONTTOOTH

250 West 39th Street, No. 14E, New York, NY 10018
Catalog \$1.00

25 mm

Magic shop, April, \$15.00

Armory, April, \$15.00

Blind Cyclops Inn, April, \$25.00

GD2 Kali, May, \$4.00

GRENADIER MODELS

P. O. Box 305, Springfield, PA 19064
Catalog free

25 mm

12 fantasy lords blister packs, April, \$2.50

Red dragon figure set (2nd dragon of the month), April, \$7.00

Folklore figure set, May, \$7.00

White dragon figure set (3rd dragon of the month), May, \$7.00

Death dragon figure set, May, \$9.95

12 Call of Cthulhu blister packs, June, \$2.50

Brass dragon figure set (4th dragon of the month), June, \$7.00

Advanced level adventurers figure set, June, \$7.00

12 Champions blister packs, July, \$2.50

Green dragon figure set (5th dragon of the month), July, \$7.00

Magic users figure set, Aug., \$7.00

Sterling dragon figure set (6th dragon of the month), Aug., \$7.00

HISTOREX AGENTS

3 Castle Street, Dover, Kent CT16 1QJ, England
Catalog \$9.52, airmail

1/32 Historex

French Napoleonic soldiers, April

Scottish Napoleonic infantry, autumn

90 mm Almond

Polish lancer, April, £17.50

Polish winged hussar, June

IMRIE/RISLEY MINIATURES

P. O. Box 89, Burnt Hills, NY 12027

Catalog \$3.00

54 mm

Napoleon on horseback, May, \$16.00

Napoleon on foot, with spyglass and map, May, \$6.50

Chasseur officer on horseback, May, \$16.00

Chasseur trooper on foot, May, \$6.50

MIL-ART

41 Birch Drive, Brantham, Manningtree, Essex CO11 1TG, England

80 mm Grenadier, 12th SS Panzer Division, Normandy 1944, June

80 mm Captain, Royal Scots Fusiliers, Zulu War, 1879, July

MINIMEN

P. O. Box 451, Chagrin Falls, OH 44022

Catalog \$2.50

54 mm Grenadier Guards Color Party Series

Color sergeant marching, Oct., \$5.95

Major marching, Oct., \$5.95

Ensign (vertical colors), Oct., \$6.95

Ensign (horizontal colors), Oct., \$6.95

Guardsman marching, Oct., \$5.95

Regt. sergeant major, Oct., \$5.95

Guardsman at attention, Oct., \$5.95

Stickman (color case), Oct., \$5.95

54 mm Regimental Band of the Grenadier Guards

Director of music, 1985, \$5.95

Drum major (guard order), 1985, \$6.95

Timebeater (bass drum), 1985, \$6.95

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Clarinet, 1985, \$5.95

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Euphonium, 1985, \$5.95

Tuba, 1985, \$5.95

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Lower Balloo Road, Groomsport, County Down BT19 2LU, Northern Ireland

Catalog \$1.00

1/72

German paratroops 1943-1944 (23 figures), April, 50 cents each

M151 Mutt, May, \$5.00

U. S. 105 mm and crew, July, \$5.00

Russian 122 mm and crew, July, \$5.00

Vietnam series part 4 (40 figures), Sept., 50 cents each

QUARTERMASTER CORPS

P. O. Box 908, Buckingham, PA 18912

Send SASE for list of boxed toy soldier sets.

Zulu War, British ammo wagon with 3 infantrymen, \$90.00

Boer War, British freight wagon with 3 infantrymen, \$90.00

Boer War, British infantry set with 6 infantrymen, \$50.00

RAFM COMPANY

19 Concession Street, Cambridge, ON, Canada N1R 2G6
Catalog \$2.00

25 mm

Custom characters, June

Reptillid extension, Aug.

Siege equipment, Aug.

Outcasts, Sept.

Flint and feather, Nov.

SERIES 77 MINIATURES

7861 Alabama Avenue, No. 14, Canoga Park, CA 91304
Catalog \$6.00

90 mm 1859 U. S. Marine Corps sergeant, April, \$21.95

90 mm 1880 trail boss, April, \$21.95

Series 77 plans to continue "The Americans" series and

also will fill gaps in history it has not yet covered. Subjects planned include American Indians, Korean War, Vietnam Conflict, and Civil War.

SUPERIOR MODELS

P. O. Box 99, Claymont, DE 19703

Catalog available

U. S. distributors are Alnavco, P. O. Box 9, Belle Haven, VA 23306, and Coulter-Bennett, 12158 Hamlin Street, North Hollywood, CA 91606

Western series

90 mm John Wayne (trail boss), \$21.50

WL series

Wizard with crystal ball in hand (4 in pack), \$4.50

Necromancer (4 in pack), \$4.50

Attack eagle with paladin rider, \$9.50

Monster masher — catapult with demon's head, \$3.50

Large devil — pit fiend (2 in pack), \$4.00

Monster masher — catapult shape of dragon, \$5.50

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Toy soldier catalog \$1.00

3" WWI doughboy tossing grenade, June, \$10.00

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54 mm

Mounted 9th Black U. S. Cavalry, 1901, June, \$15.00

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Mounted Mongol heavy cavalryman, 1241, Oct., \$18.00

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The following firms also will have new releases, but they suggested that you write directly to them for information.

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which describes the firm's line of miniature tools. There is no charge for this brochure.

For a free copy of a six-page band saw blade catalog, No. OL-35, write to Olson Saw Company, Route 6, Bethel, CT 06801.

An April 1984 brochure listing military history books is available at no charge from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.

Miscellaneous. Aircrafts in Detail, P. O. Box 2516, Van Nuys, CA 91404-2516, sells packets of aircraft prints, including detailed close-up views. The firm also can supply 8" x 10" prints and lists of reference sources for the aircraft being modeled.

Aviation, automotive, and marine enthusiasts can find limited edition collector's prints at Densa Fine Art, 536 Morse Avenue, Schaumburg, IL 60193.

To publicize the October release of its film *The Aviator*, MGM Studios is sponsoring a nationwide aircraft modeling competition. Contests will be held between August 16 and September 6 at 50 shopping malls throughout the country. Aircraft entered must represent full-size aircraft built and flown between 1915 and 1935. For more information contact Geoffrey Styles, Director of Public Relations, Academy of Model Aeronautics, 1810 Samuel Morse Drive, Reston, VA 22090.

Midgetoy Division, K. W. Incorporated, 1202 Eddy Avenue, P. O. Box 5, Rockford, IL 61105, will custom make three-dimensional castings in a variety of metals including brass, pewter, zinc, and white metal.

Nautical Brass, P. O. Box 744, Montrose, CA 91020, is a bimonthly magazine covering nautical antiques and collectibles and maritime history. Yearly subscription rates are: \$10.00 U. S. bulk rate; \$13.00 U. S. first class, Mexico, Canada, and overseas surface mail; and \$22.00 overseas airmail.

Original Reproductions, Box 2519, Mesa, AZ 85204, is offering 18" x 24" reproductions of WWII restricted documents on heavy paper stock. There are four posters in the set: B-17E, Me 109F, Supermarine Spitfire, and Zero. Each set sells for \$7.95 plus \$1.00 for shipping and handling.

FSM binders. Looking for a convenient place to store your copies of FSM? FSM binders are now available at a cost of \$6.50 for subscribers and \$6.95 for nonsubscribers. Add \$1.00 per order for postage and handling; \$1.50 outside the U. S.

Coming events. The 15th Kit Collectors Exposition and Sale will be held August 19 from 9 a.m. until 3 p.m. at the Buena Park Hotel, 7675 Crescent Avenue, Buena Park, California. Admission is \$2.00. For more information, send a stamped, self-addressed envelope to Bob Keller, Kit Collectors International, P. O. Box 38, Stanton, CA 90680.

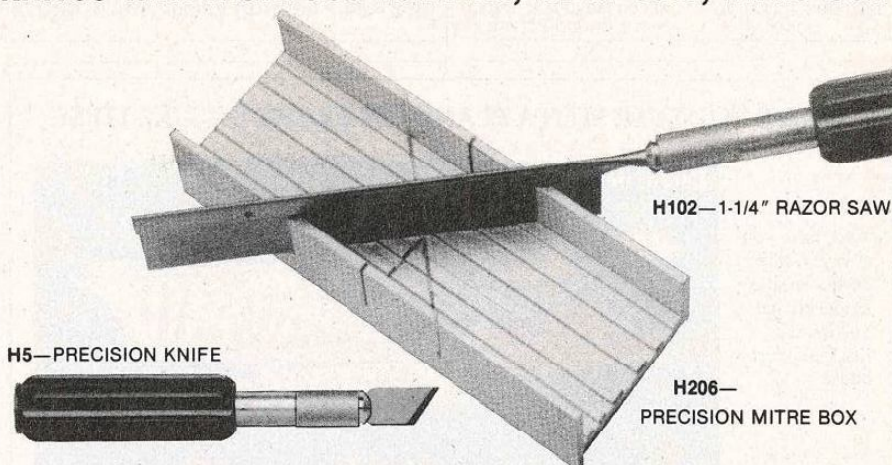
The Fort Worth Scale Modelers' Society will sponsor its seventh annual Super Contest on August 25 at the Carswell Air Force Base Noncommissioned Officers' Club Open Mess. Each adult competitor will be charged an \$8.00 entry fee. Write to the Fort Worth Scale Modelers' Society, 1124 South Lake Street, Suite D, Fort Worth, TX 76104, for a gate pass.

The 1984 Green Bay Invitational, sponsored by the Upper Peninsula Scale Model-

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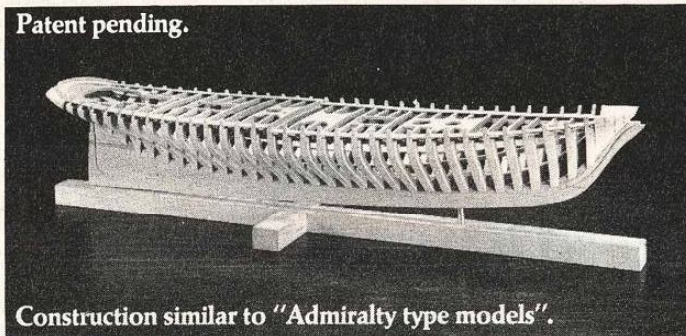
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ers and Richard I. Bong IPMS chapter, will be held August 25 at the Memorial Union, St. Norbert College, De Pere, Wisconsin. The contest will include 20 categories, a best of show award, two special awards, films, a raffle, and a swap room. An entry fee of \$1.00 per model will be charged at the door. More information is available from Mark Dryer, Box 26, Route 1, Ishpeming, MI 49849.

Hobby Expo '84, sponsored by the St. Louis Hobby Association, will be held August 26 at Kiel Auditorium, 15th and Market, St. Louis, Missouri. Admission is \$2.00, and there is a \$1.00 per model entry fee. For further information, send a large stamped, self-addressed envelope to the St. Louis Hobby Association, P. O. Box 4032, Jennings, MO 63136.

Two more events at the Buena Park Hotel, 7675 Crescent Avenue, Buena Park, California, are the Airline Memorabilia Show and Sale on September 9, and the Kit Collectors International Model Car Meet and Sale on September 30. Both events will be held from 9 a.m. until 3 p.m. Admission is \$2.00. Send a stamped, self-addressed envelope to Bob Keller, Kit Collectors International, P. O. Box 38, Stanton, CA 90680, for more information.

IPMS Flight 19 is sponsoring the 1984 South Florida Scale Modeling Convention September 14-16. It will be held at the Holiday Inn of Miami Golden Glades, 148 NW 167th Street, North Miami, Florida. Modelers interested in more information should contact David Tipps, Flight 19, 5435 NW 192nd Lane, Miami, FL 33055.

The Delaware Valley Scale Modelers will host the IPMS Region II convention, October 12-14 at Halloran Plaza, Pennsauken, New Jersey. For additional information, write to Paul L. Viens, 217 Barnsbury Road, Langhorne, PA 19047.

Modelfest '84, a scale model contest and exhibition sponsored by the Austin Scale Modelers Society, will be held October 27 in Building 41 of Camp Mabry, West 38th Street and Mo-Pac Expressway, Austin, Texas. Contest entry fees are \$2.00 per model for senior category members and \$1.00 per model for those in the junior category. Admission is free. For more information, call Bob Bethea, (512) 327-4304, or Tom Eisenhour, (512) 442-4800.

The 22nd annual exhibit sponsored by the National Capital Military Collectors will be held from 10 a.m. until 5 p.m. on November 3 at the Tysons Westpark Hotel, 8401 Westpark Drive, McLean, Virginia. Admission is \$3.00; children under 12 will be admitted for \$1.00. Complete information can be obtained from Dick Perry, 6433 Deepford Street, Springfield, VA 22150.

Modeling club news. The response has been good to our request for information about organizations and publications devoted to modeling, but we know there are many more groups out there we haven't heard from. Because we'd like to publish a list that's as complete as possible, please submit the following information to FSM Update before September 15: name of the organization and its publication; frequency of publication; areas of interest; complete address for the location of the club; and name, address, and phone number of a contact person.

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FSM READER FORUM

Let us know what you think! Comments, suggestions, corrections, and additional information on FSM articles are welcome in this column. Letters submitted for publication should be clearly marked "To the Editor" on both the envelope and the letter, should be typed or hand-printed, and should be no more than 300 words long.

A minority opinion on figure realism. May I express a minority opinion? Like many other arts, figure painting appears to be striving less for realism and more for what a painted figure is "supposed to" look like. Especially in the case of oils on metal figures (as in the March/April issue of FSM), the shading and highlights are so exaggerated that the figures just don't look real. Such contrasts would hardly be appropriate on a two-dimensional painting, let alone a three-dimensional figure.

Notice the more subdued highlights and shading on the armor models in the same issue. Would a tank or an aircraft look realistic if shaded as heavily as a figure? Yet the same sun shines on us all, man and machine, and makes the same shadows. I, for one, feel that a figure with much more subtle shading and under proper lighting looks much more realistic.

It looks more and more like "they" have decided what a painted figure is supposed to look like, and realism be hanged. And a modeler who wants to win a prize, or even be accepted, has to do it "right." But since "they" are "us," can't we change our minds? Opinions from FSM readers, please.

*John Henry Sain
Medford, Oreg.*

Auto articles, please! I've been receiving FSM since the Fall 1982 issue. You have done a fine job, and I've enjoyed quite a few articles. But in the last four issues it seems you have neglected automobiles, and are more concerned with planes and military hardware.

I am in no way against other forms of modeling, but I do believe you stated that you would try to fill all of our modeling interests. I realize there are magazines exclusively for cars, but I wouldn't be writing this letter if I weren't interested in FSM. Articles like building a paint spray booth, making realistic light lenses, and new product reviews are interesting, but articles like Wayne Moyer's white metal car stories really keep me glued from start to finish.

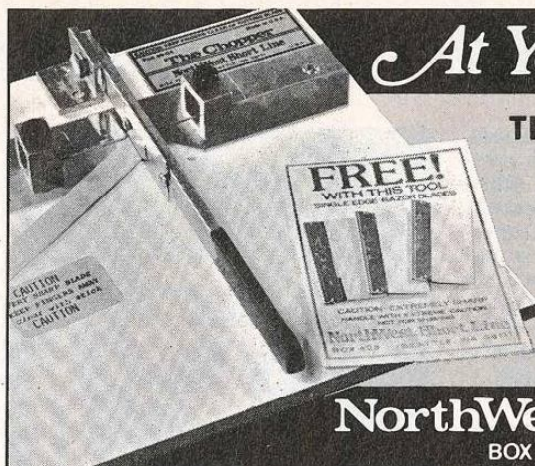
I would like to see more in-depth writing about 1/43 scale metal and resin car kits rather than just one-column reviews.

*Robert P. Gorett
Bronx, N. Y.*

[Me too, Bob. Trouble is, when planning an issue I have to choose among articles that I have on hand — and the cupboard with the auto stories in it is bare. We're trying to round up more auto modelers to write articles, but so far haven't had much luck. Auto modelers willing to write for FSM are welcomed with open arms; send to our Editorial Secretary for our free handout describing what we need and how to submit articles. — Bob Hayden]

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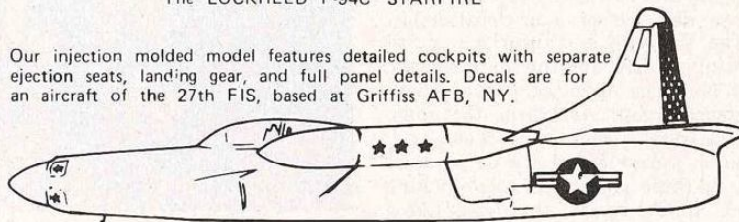
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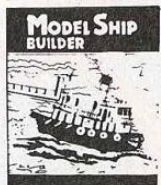
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Every FSM Workbench Review is a first-hand report by a modeler who has actually built the kit or used the product. While our reviewers are encouraged to compare the products to similar ones in their experience, evaluation is of secondary importance; the reviewer's primary goal is to provide a detailed description of the product so FSM readers can evaluate it for themselves. Models shown in Workbench Reviews are built straight from the box.

Kit: No. B-1252, VF-1S Valkyrie, Variable Type

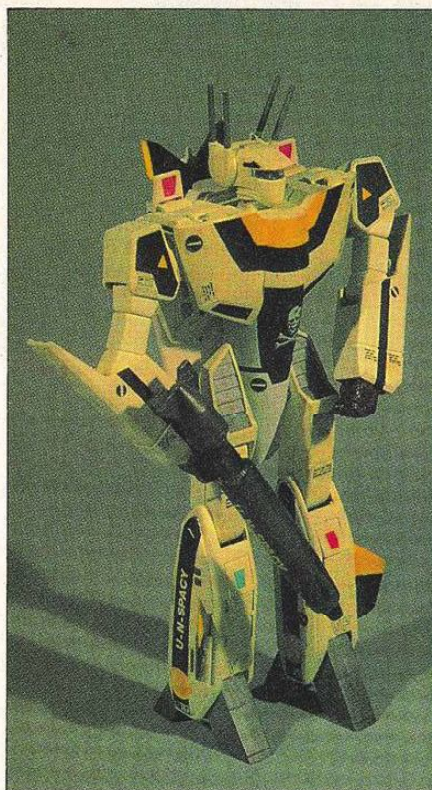
Scale: 1/72

Manufacturer: Imai, imported by Horizon Hobbies and Toys Distribution, 428 Boyd St., Los Angeles, CA 90013

Price: \$16.95.

SCIENCE FICTION MODELS are popular in Japan, and now these kits have infiltrated the defenses of your local hobby shops. The Valkyrie is a futuristic multi-role fighting vehicle, and the main weapon of the U. N. Space Agency (Spacy), a fictitious defense organization from the Japanese animated television series "Macross."

This kit is variable and can be made to unfold into three poses: the robot-looking "Battroid," the "Gerwalk" that looks like a jet with legs, and an F-14ish interceptor. (Single-pose kits are also available.) This one contains 216 styrene, rubber, and metal parts, featuring recessed panel lines. Most of the markings are provided on the decal sheet, but some markings must be painted on. My instruction sheet was in Japanese, but the latest kits imported have multilingual instructions. The 20-step illustrated instructions were easy to follow and show how to move the model into its different poses.



Kevin Atkins

Since this model is designed so the parts can be moved, it requires more patience during construction than the average kit. I assembled and painted it in subassemblies to ease construction; each either presses on or is held to the rest of the model with screws. In general the parts fit well with only a little sanding needed. The legs, arms, forward body, and landing gear doors don't fit well due to the many working parts.

I spent 30 hours on the kit, many of them



figuring which sections could be painted before or after assembly. I found it necessary to keep portions of the moving parts unpainted; paint on the bearing surfaces hinders or prevents the moving parts from operating. Parts in steps 9, 11, 12, and 13 are particularly affected by paint. Studying the instructions and dry-fitting the parts will show you the problem areas.

The kit stands roughly 10" high in its Battroid form; it's labeled as 1/72 scale but since this is a fantasy model, it can be any scale you want. By carefully following the directions the average modeler should be able to handle this kit. I enjoyed the challenge and look forward to more in the series. In more ways than one, this type of modeling is from a different world.

Kevin Atkins

Kit: No. 7A-A1, Tachikawa Ki-55 Ida

Scale: 1/72

Manufacturer: Fujimi Mokei Co., Ltd., 4-211 Toro, Shizuoka City, Japan

Price: \$3.50.

THE TACHIKAWA Ki-55 Ida was used as an advanced trainer, while the similar Ki-36 saw service as an observation and light attack aircraft. The similarities between these two aircraft allowed Fujimi to produce both using common molds.

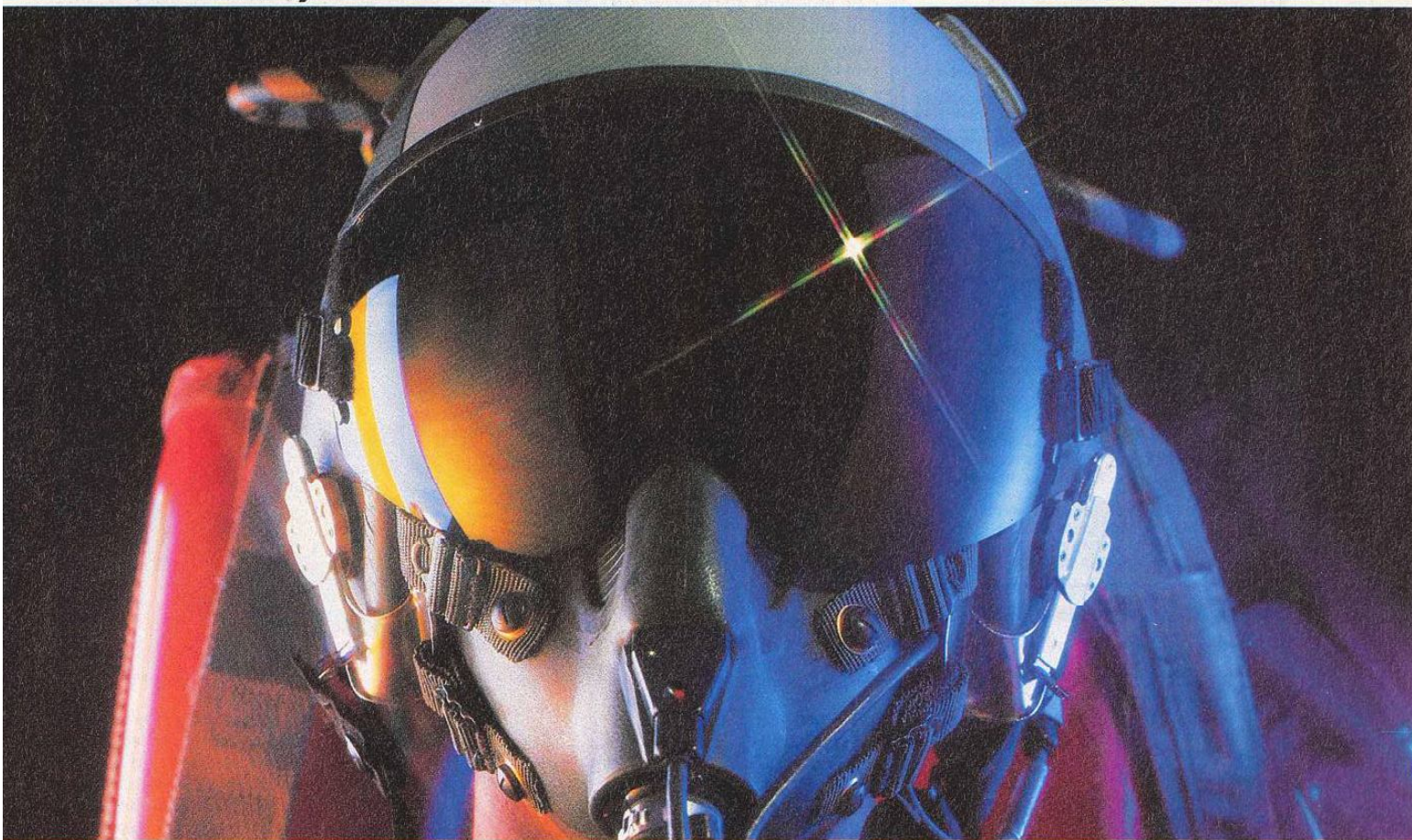
This 38-part kit is molded in bright orange and clear styrene and includes features of both aircraft; the observation windows (molded separately) and the holes for the weapons pylons in the lower wing halves should be eliminated from the Ki-55. The instruction sheet is good and easy to follow, but it doesn't mention these modifications.

The detailing is good, but I thought the panel lines were a bit heavy for the scale. The simulated fabric-over-structure detail on the control surfaces is excellent, and the cockpit detail is more than adequate. The two-part canopy is thick but surprisingly



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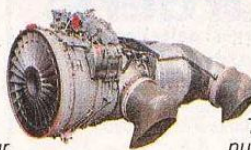
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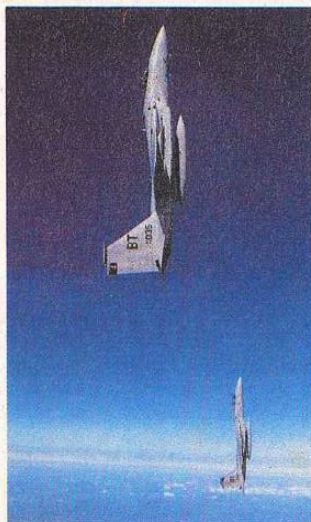
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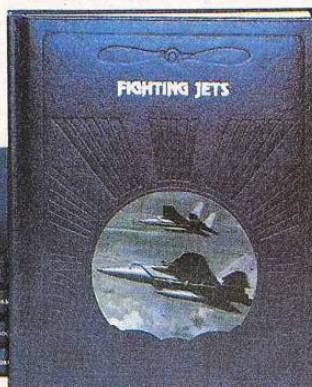
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clear. The engine is also nicely done with well-defined pushrod housings, cylinder cooling fins, and gear case ribs.

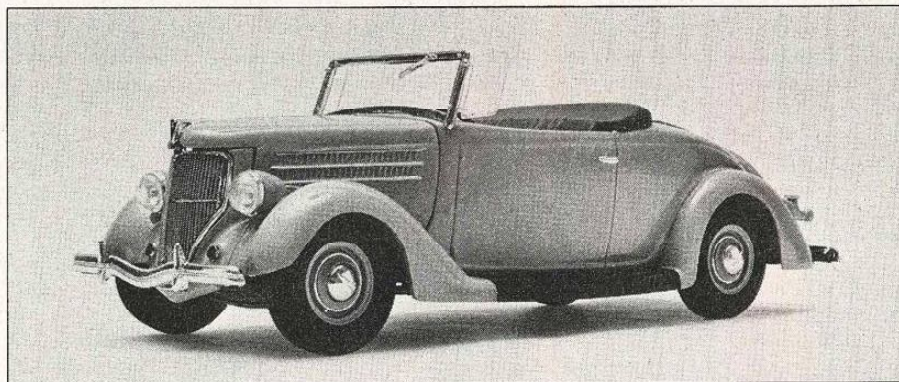
The kit went together easily, with minor fit problems at the trailing edge of the fin ahead of the separate rudder and at the canopy-fuselage joint. I found the instructions to be misleading when it came time to paint the model. They indicate that cowlings, prop spinner, and landing gear pants were painted cocoa brown, but my references indicate that they should be black. I painted the prop blades brown with yellow warning stripes instead of silver, and the interior metallic blue instead of navy blue.

The decals in my kit were out of register and the Hinomarus (Japanese national in-

signias) were too small. I substituted modified school insignias from Microscale sheet No. 72-68 and the meatballs from the new IPMS/U. S. A. Hinomaru sheet. The model scales well with the dimensions given in Francillon's *Japanese Aircraft of the Pacific War* and Thorpe's *Japanese Army Air Force Camouflage and Markings-World War II*, but the wing tips appear too blunt and the rudder should be more pointed with less curvature to its trailing edge.

I spent 18 hours on my model, less time than average for me with a model this size. The kit was easy to build, looks good, and the choice of subject is refreshing. I hope Fujimi continues with its 1/72 scale WWII Japanese line.

Will Reynolds



Kit: No. 6591, '36 Ford

Scale: 1/25

Manufacturer: Ertl Company, Hwys. 136 and 20, Dyersville, IA 52040

Price: \$6.25.

THE ERTL COMPANY has resurrected some of the old AMT 3-in-1 kits from the '60s and this classic Ford brings back the memories. The kit can be built stock, as a street rod, or as a dragster. It contains 160 parts molded in yellow, chrome, and clear styrene with vinyl tires. I found the plastic to be softer than usual and there was some flash, probably due to the age of the molds.

The parts were not numbered, which could be confusing to a novice. For example, the optional stock or similar dropped front spring/axle is installed in the upside down chassis. Without numbers, it's hard to tell which is which. The parts are labeled in the 8-step instructions, but there are more than 25 parts in some steps. This is further confused by the assembly sequence keyed to letters (first install A then B), and some of these have more than one part. More steps with fewer parts in each would have helped.

The kit can be built as a roadster (top up or down) or a coupe. I decided to build my

model as a stock roadster with the top down. There are two dashboards included, one for the coupe and one for the roadster. Unfortunately the coupe dash is labeled "stock/drag," but if the model is built as a stock roadster, the dash will not clear the cowl.

The three-piece hood fit poorly to the body; it was oversize all the way around. The taillight fairings also fit poorly. The stock engine went together well and is a good representation of the original. The chassis has the exhaust system molded in, so it can't be removed if you choose the optional side pipes for the street rod or dragster versions. There is no connection between the exhaust manifolds of the stock engine and the exhaust system on the chassis. The separate steering column and gear is a nice touch and there's room for adding details to the chassis, engine, and interior.

The kit dimensions scaled well with the information in Page's *Ford V-8 Cars and Trucks*. I spent 25 hours on the model, more than usual for a car model in this scale. With some effort, this kit can be modified into other '36 and '37 Ford models. It's nice to see the return of these classic kits, but the poor fit and confusing instructions might give the beginning modeler headaches.

Paul A. Erler

Kit: No. A191, Pitts S2A (Rothmans)

Scale: 1/72

Manufacturer: LS, Japan

Price: \$2.50.

THE TINY PITTS is one of the most successful aerobatic aircraft of all time, and it's a familiar sight at air shows around the world. The LS model is also tiny, measuring a minuscule 3 1/2" long with a wingspan of 3 3/4". The kit contains 24 parts molded in

white styrene with optional clear closed canopy or windscreen. A self-sticking foam rubber display stand allows the model to be stuck just about anywhere. A basic interior consisting of floor, seat, headrest, and control stick is included.

The four-color decal sheet provides all markings including registrations for five aircraft of the Rothmans aerobatic team. The instructions are easy to understand and include a three-view drawing.



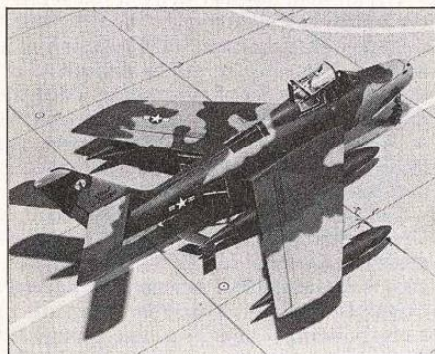
Brian Gibbs

Surface detail is excellent, with fine recessed panel lines and a realistic fabric-over-former look to the flying surfaces. The parts fit well, and assembly took me only 45 minutes.

Painting the model, however, was a different story. The Rothmans aircraft are white with the underside of the wings and tail plane painted sky blue. The real problems occur when painting the fine dark blue edging to the wings, tail plane, rear fuselage, landing gear struts and pants, and interplane struts. Successfully masking and painting these thin stripes on such tiny parts was difficult and took me at least 10 hours. It's easiest to leave off the struts and top wing until after the entire model is painted.

The kit is in scale with the information in the November 1978 issue of *Scale Models*. It can be built by any beginner, but the complicated paint job requires the skill of an expert.

Art Loder



Kit: No. 5432, Republic F-84F Thunderstreak

Scale: 1/48

Manufacturer: Monogram Models, Inc., Morton Grove, IL 60053

Price: \$5.25.

"THUD'S MOTHER" AND "HOG" are two of the unofficial nicknames bestowed on the F-84F. The "Thud," Republic's F-105 Thunderchief, was the direct descendant of the F-84, although there is little similarity in their designs. "Hog" came from its propensity to use up lots of runway on takeoff. The aircraft served the U. S. A. F., Air National Guard, and many NATO countries before being retired in the 1970s.

Monogram's kit includes 75 parts molded in olive drab and clear styrene. The molded-in detail is excellent, the best I've seen in this scale. The kit features a detailed cockpit, open speed brakes, and a dolly that can carry either a bomb or auxiliary fuel tank. The instruction sheet names the parts but it is vague concerning the location of the cockpit tub. I discovered (too late) that the fuel

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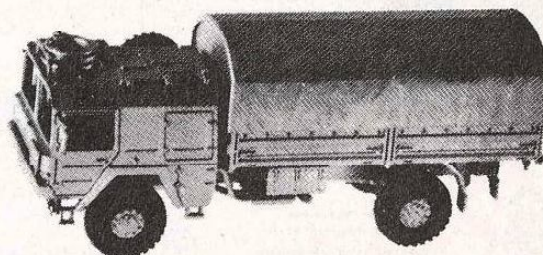
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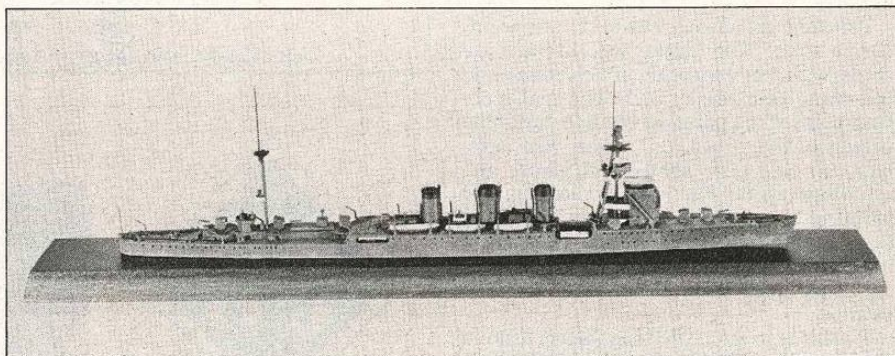
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dump vent is shown installed backwards. Decals include markings for camouflaged Texas ANG and bare-metal Missouri ANG machines.

I had no major problems building the kit, but I found mounting the nose gear inside the intake splitter/wheel well tricky. Weight had to be added above and behind the splitter to keep from using the tail support provided. The splitter also had a sink hole on each side that needed to be filled. Extra attention was needed when attaching the wings to align them properly to the wing roots on the fuselage.

I left the ejection seat and speed brakes off until last to make it easier to paint the model. I had trouble getting the decals to stick, so I helped them with a dilute solution of white glue. The kit scaled accurately with the dimensions in Koku-Fan's *Famous Airplanes of the World No. 61* and Squadron/Signal's *F-84 Thunderjet in Action*. The completed model looks good, too. The wing trailing edges look a little thick but the landing gear doors are just right for the scale. I spent my average 15 hours on the kit and I can recommend it to modelers with a little experience.

Randal Dieck



Kit: No. 7604, Kiso

Scale: 1/700

Manufacturer: MRC-Tamiya, Model Rectifier Corporation, Edison, NJ 08817

Price: \$9.98.

THIS IS THE THIRD ship in the *Kuma* class of light cruisers to be released by Tamiya. The *Kiso* differs from the two earlier models in the style of her bridge and funnels, the number and type of antiaircraft batteries, and the simple rear pole mast. She was launched in 1920 and sunk off Manila, Philippines, on November 13, 1944. Her main armament consisted of seven 5½" guns and four torpedo tubes. For a cruiser she was small, but fast — top speed was 36 knots. Tamiya's waterline kit represents the *Kiso* as she appeared in 1932.

The kit has 103 parts molded in dark gray styrene. The raised panel detail is outstanding, considering the scale. The model can be

mounted to the wooden base or a metal weight can be installed to give the model a little heft. Both base and weight are included.

The kit went together well but I found that the bottom hull piece wouldn't lie flat when it was screwed to the base. If the bottom hull is screwed down first, it will be difficult to attach the remainder of the model. I filled the lifeboats with putty and sanded the tops flat to represent covers. The canopy over the bridge sat up too high, so I sanded the top of part B34 and the bottom of B35 to correct it.

The wood display base is a nice idea but *Kiso's* sister kits *Kuna* and *Tama* do not include the base and sell for \$5.50; the difference is a considerable amount for the base. Otherwise the kit is excellent. I spent 12 hours building it and it's simple enough for a beginner to handle. It scales well with the dimensions in Watts and Gordon's *The Imperial Japanese Navy*.

Dennis Moore



Wayne E. Moyer

Kit: No. 19, Mercedes 300 SLR Coupe

Scale: 1/43

Manufacturer: Provence Moulage, available from Valley Plaza Hobbies, 12160 Hamlin St., North Hollywood, CA 91606

Price: \$23.00.

THE MERCEDES 300 SLR coupe was a rarity; only two were built following the 300

SLR roadsters. The coupes were designed and built for the 1955 Mexican Road Race, which was canceled after one of the Mercedes roadsters was involved in a tragic crash in that year's Le Mans.

This mixed-media kit features epoxy resin interior with seats, dashboard, steering wheel, and a one-piece body. The base plate is white metal, and the detail parts are

photoetched. "Glass" parts are vacuum-formed plastic and decals provide the plaid fabric pattern for the seats and a logo.

There was no instruction sheet, but an inspection of the 23-part kit reveals how it is assembled. The hand-laced wire wheels are excellent and look perfect for the scale. The epoxy body casting has excellent detail (better than metal car kits) as does the photo-etched grille with its Mercedes logo.

The kit fit well except the metal base plate had to be filed down to get it to drop into the body. Some sanding was required to get the tabs on the instrument panel to fit into the notches in the interior tub. I cut sheet styrene discs to represent the brake drums behind the wire wheels.

The completed model is both dimensionally and visually accurate. I simulated the polished alloy body with Metalizer paint, the most difficult part of the project. It took 5 hours to complete and, despite the lack of instructions, a beginner should enjoy building it.

Wayne E. Moyer



Brian Gibbs

Kit: No. 5101, BAe Sea Harrier FRS Mk. 1
Scale: 1/48

Manufacturer: Airfix, Palitoy, Baker St., Coalville, Leicester, England
Price: \$11.50.

THE FALKLAND ISLAND (Malvinas) campaign proved the worth of the vertical takeoff and landing (VTOL) aircraft. The Sea Harrier and the RAF's Harrier GR. Mk. 3s were the only fighter types used by the British against the Argentine forces. They were successful in shooting down more than 20 aircraft, hitting many of them with the American AIM-9L Sidewinder missiles.

The Airfix kit contains 85 parts with delicate raised detailing. Some of the details are simplified; the suck-in doors around the intake are represented by recessed panels. When the real aircraft is at rest, the doors on the top of the intakes droop in, those on the bottom droop shut. The decals offer markings for two aircraft (one an Argentine Mirage killer), but those in my sample kit were out of register. The instructions were easy to follow but do not name the parts. The kit includes auxiliary fuel tanks, Sidewinders, and Sea Eagle missiles.

I had no trouble putting the kit together, with only minor sanding required on some of the joints. I used Compucolor's Dark Sea Gray paint overall for the 801 Squadron aircraft. The kit scales well with the plans in the April 1983 issue of *Scale Models*.

The completed model took only 5½ hours to build, slightly less than my average for an out-of-the-box model in this scale; beginners will find the kit easy to build. The choice of subject is still topical, but the oversimplified detail was disappointing.

Art Loder
FSM

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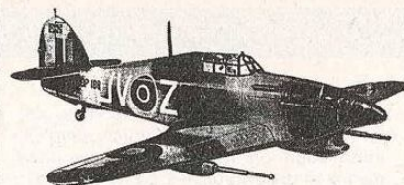
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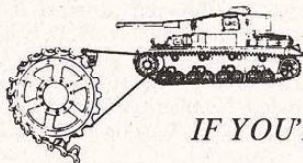
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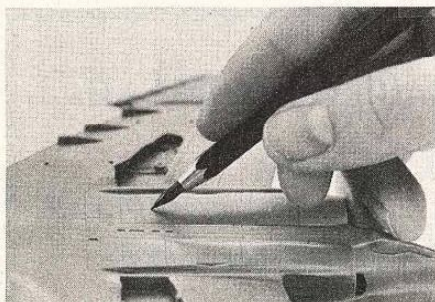
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FSM invites manufacturers, importers, and distributors to submit product samples. Information on new-product announcement and review policies is available from FSM Update, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233.

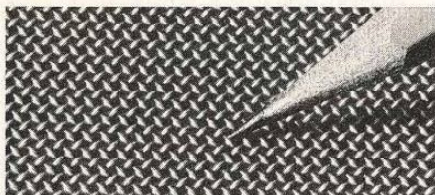
FSM readers should check their local hobby shops for the items in this column before writing directly to the manufacturers.

FINESCALE MODELER staff photos by
A. L. Schmidt and Paul A. Erlar



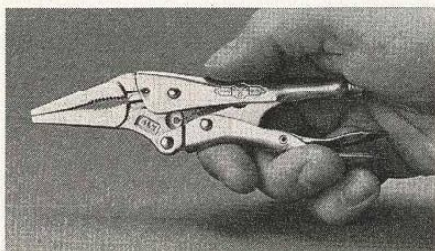
Carbide scriber

A carbide scriber — a solid carbide point set in an anodized aluminum handle — is available for \$4.99 from Harry B. Higley & Sons, Inc., P. O. Box 532, Glenwood, IL 60425. The catalog number is CSR001.



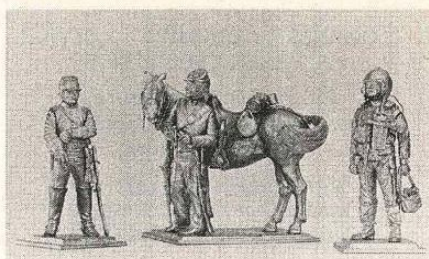
1/25 scale tread plate

New from McKean Models, 707 East 41st, Suite 236, Sioux Falls, SD 57105, is 1/25 scale tread plate. Two 4" x 8" .040"-thick plastic sheets sell for \$3.98; add 75 cents for postage and handling. The tread plate is suitable for steps on truck and fire truck models, as well as floors of 1/25 and 1/35 scale armored vehicles.



Miniature locking pliers

Petersen Manufacturing Company, Inc., DeWitt, NE 68341, now produces a 4" VISE-GRIP locking pliers, useful for working in tight spaces. Two styles are available: No. 4LN (shown), long nose pliers, \$9.50, and No. 4WR, curved jaw pliers, \$7.95. Both have built-in wire cutters.



90 mm cast-metal figures

Three new 90 mm figures in "The Americans" line from Series 77 Miniatures, 7861 Alabama Avenue, No. 14, Canoga Park, CA 91304, are (from left) A/34, U. S. light artillery captain of 1863; A/36, U. S. cavalry sergeant of 1861-1865; and A/35, U. S. Navy carrier pilot of the 1970s. Instructions are included. Numbers A/34 and A/35 retail for \$21.95 each; A/36 sells for \$74.95.



Abrasive cleaners

Granlund Engineering Company, Parker Street, P. O. Box 7, Ware, MA 01082, has introduced the Sanding Insurance line of accessories for cleaning clogged sanding belts, sanding discs, drums, and sheets. According to the company, the abrasive cleaners result in fewer belt and disc replacements, reduce load and running time for power tools, and are odor free. Styles available are (clockwise from bottom) No. 116-SP, 1" x 1" x 6" pocket size, \$3.00; No. 3315-SP, 3" x 3" x 1 1/2" bench mount, \$9.00; and No. 158-SP, 1 1/2" x 1 1/2" x 8" workshop size, \$8.00. Granlund told FSM that these prices are averages for retail stores and may be different in your area.



Brushes

Model Rectifier Corporation, 2500 Woodbridge Avenue, P. O. Box 267, Edison, NJ 08817, is selling Tamiya horsehair and weasel hair paintbrushes in seven sizes and two types, flat and pointed. Prices range from 98 cents to \$3.98. From top are item No. 8713, flat No. 5, \$1.50; 8718, high-grade pointed medium, \$3.98; 8715, flat No. 0, 98 cents; 8719, high-grade pointed small, \$3.50; and 8717, pointed small, \$1.25.



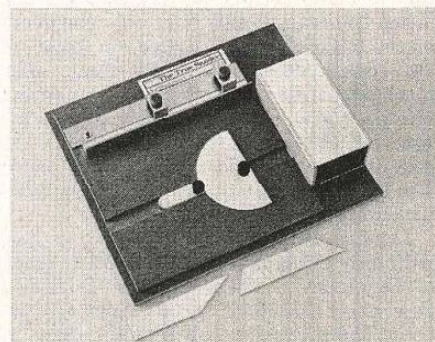
Modeling knife

The Über Skiver knife is available for \$16.95 from *Model Builder* magazine, P. O. Box 10335, Costa Mesa, CA 92627. The knife set comes in a hardwood case and includes two vials with four No. 11 blades and one each of Nos. 10, 12, 15, and 20; extra blades can be purchased separately. The knife features a "rear drawbar clutch" which keeps your fingers away from the blade while you change blades. Seven satin anodized handle colors are available: silver, blue, red, green, gold, black, and violet.



54 mm soldiers

New 54 mm cast-metal figures from Warriors and Eagles, 7 Manor Gardens, Hunmanby, North Yorkshire YO14 OPT, England, include a World War One Polish rifleman (left) and a member of the 11th New York Fire Zouaves of the Civil War. The figures, sculpted by Peter E. Marshall, come with painting instructions. Each sells for £3.00; add 25 percent for foreign postage.



Sanding fixture

The True Sander, product No. 57-4, is available from NorthWest Short Line, Box 423, Seattle, WA 98111. It allows accurate, finished sanding of end cuts on wood or plastic parts and has an adjustable angle guide. Also included are preset 30-, 45-, and 60-degree miter guides. It sells for \$17.95.



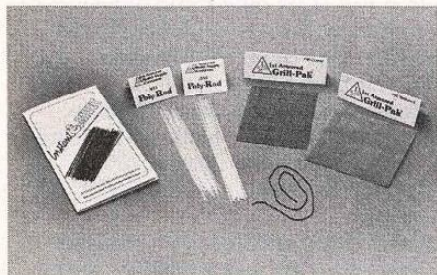
Paintbrush cleaner and hand soap

Two products in "The Masters" line offered by General Pencil Company, P. O. Box 5311, Redwood City, CA 94063, are a paintbrush cleaner and preserver, and a bar of hand soap. The brush cleaner and preserver comes in a hard cake form and works with water. Four sizes are available in retail stores: ¼ ounce, 89 cents; 1 ounce, \$2.95; 2½ ounces (shown), \$4.95; and 24 ounces, \$24.95. The 2½-ounce bar of non-abrasive hand soap, \$1.69, is made to remove paint from skin without using thinners.



Compucolor enamels

Rosemont Hobby Shop, Trexler Mall, P. O. Box 139, Trexlertown, PA 18087, is the East Coast distributor of Compucolor enamel paints from England. The colors are matched by computer to color samples from armor and aircraft. Modern colors are matched to FS 595a color guides and other countries' equivalents. Each ½-ounce tin is priced at \$1.29.



Scratchbuilding and conversion materials

Scratchbuilding and conversion materials available from 1st Armored Model Supply Company include (from left) No. 1A-IR, Instant Rivet for producing scale rivet heads, \$3.50; .015" (No. PR15, \$1.15) and .050" (No. PR50, \$1.25) Poly-Rod styrene dowel stock (12 pieces per pack); Grill-Pak (No. GP-30, coarse, and No. GP-50, medium-2), \$1.95 per pack; and No. CP1, 1/35 scale black chain, \$1.00. Send \$3.00 to P. O. Box 1706, New Rochelle, NY 10802, for a 1984 catalog and periodic updates.

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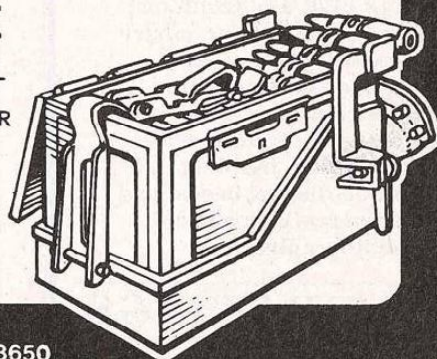


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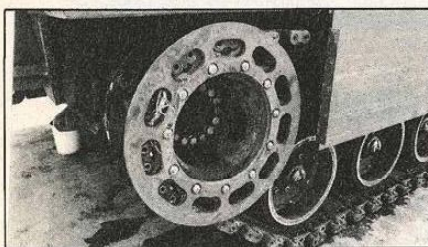
FEATURES



Real aluminum skins for models! Gerry Humbert.

Ever suffered the agony of defeat in applying a simulated metallic finish? Well, there's another way, and you'll read about it in the November/December issue of FINE-SCALE MODELER! The technique involves electroplating the model with a micro-thin skin of real aluminum, and the results are absolutely spectacular. You'll also find techniques for casting with RTV rubber molds, building and finishing wood display bases, and shooting ultra-realistic airfield diorama photographs!

DATA/DRAWINGS



M1 Abrams details. Steve Zaloga.

Armor expert Steve Zaloga returns to the pages of FSM with a detailed article on superdetailing the Tamiya 1/35 scale M1 Abrams. In addition to his step-by-step modeling notes, Steve includes closeup photos of production M1s in service at Fort Hood. Even if you've already built the Tamiya kit, you may want to make some of the changes to bring your model up to date!

**ALL IN
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FROM THE EDITOR

The Invasion of the Sci-Fi Kits

ONE OF OUR MOST IMPORTANT missions at FSM is to bring you timely information about new products. In this issue two of our four new-product columns, FSM Update and FSM Workbench Reviews, include items about Japanese science-fiction kits now arriving on our shores and in our hobby shops.

Such models have been popular in Japan for several years, perhaps longer. I understand they are based on long-running animated cartoon programs on Japanese TV, and that the robot-like figures are neither robots nor figures, but gigantic, fortress-like "mobile battle suits" and "vertical one-man tanks" with humans inside.

I recall reading that Japanese sci-fi cartoons are scheduled to appear soon on U. S. TV. If they do, and if they are as popular here as in Japan, these models, and toys like them, could be this year's — or next year's — Cabbage Patch Kids. Even now, hobby dealers report that these kits don't stay on the shelf long.

What does all this mean for those of us who, at least most of the time, model the real world instead of cartoonists' fantasies? If these models become a fad, will they crowd out planes, cars, tanks, ships, and other traditional modeling subjects?

Chances are that won't happen. While a few of us may build one or two kits, I doubt that this new subject matter will lure established modelers away from their main areas of interest. But the sci-fi invasion may bring new modelers into the hobby, and that's important.

If scale modeling is to be a healthy, thriving hobby in years to come, the seeds of interest have to be planted somehow. Think back to the kind of kit you got started with — was it an Airfix 1/72 scale fighter, or one of those glow-in-the-dark Aurora monsters? Whatever your answer, it's probably not what you're building nowadays.

In the long run, what matters most about these strange sci-fi subjects is that they are kits — and kits mean glue and tools and modeling. If the bizarre subject matter lures new modelers away from video arcades and gives them a taste of what this hobby is all about, the odds are better that five or ten years from now they'll be building what we call, for want of a better word, "serious" subjects.

I'm for that.

Bob Haydel

Editor

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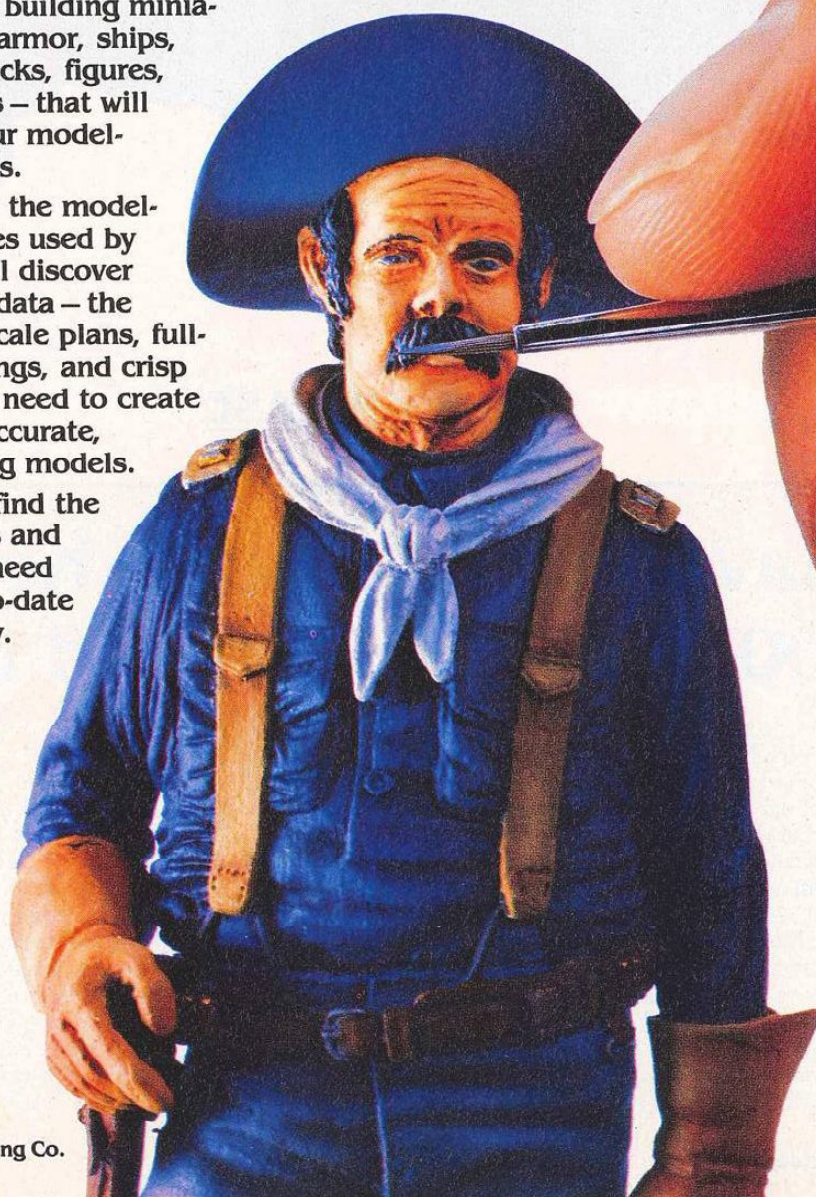
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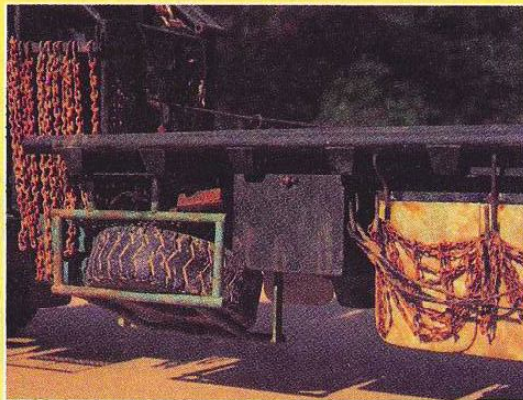


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Model by Jeff Brodzik.
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(Below) An unusual model of a rarely modeled subject, Mark's steel-fendered flatbed truck is a replica of one in the fleet of M & R Trucking, Drayton Valley, Alberta. (Right) Oil fields are far from tidy, so heavy weathering is appropriate for models of oil field equipment. Note the realistic dried dirt caked in the grooves of the tire slung under the bed.



FSM SHOWCASE

Mark Savage's 1/25 scale Kenworth C-500 Canadian oil field truck

FOR SEVERAL YEARS, Mark Savage of Butler, Pennsylvania, has spent all of his modeling time constructing Canadian oil field trucks and drilling equipment. Mark told FSM how he built his "semi-scratchbuilt" model of the Kenworth C-500.

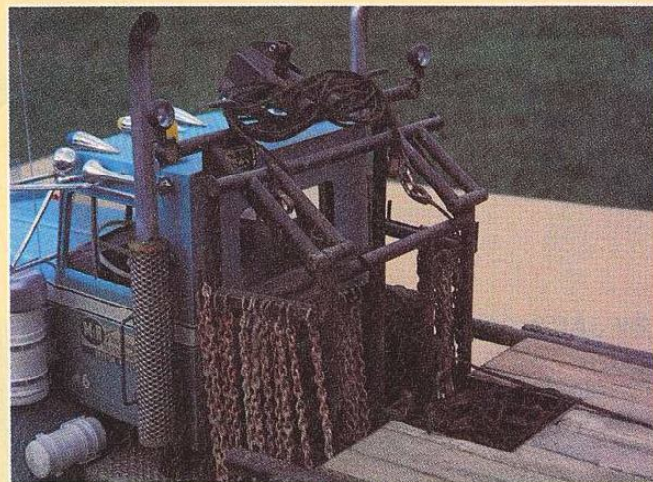
"I decided to build this model mostly because the steel-fendered Kenworth C-500 has always been a favorite of mine and is common in a variety of oil field applications," Mark explained. "The specific truck I modeled, M & R Trucking [Drayton Valley, Alberta]

No. 46, is unique among most Canadian KW C-500 bed trucks, and it's also the only Canadian oil field truck I've ridden in.

"I took photographs and dimensions from the actual truck while I was in Canada. From these I made 1/25 scale orthographic drawings. The photos were also helpful as weathering references. Anyone planning to model this subject should get as many photos of the real thing as possible (shop-built equipment, modifications to factory equipment, and makeshift repairs make this

necessary). Also, I used a variety of Kenworth drawings and brochures and a list of specifications from M & R's dispatcher as reference material."

Mark relied extensively on Plastruct shapes and Evergreen styrene strip for building the model. Other materials include sheet aluminum, K & S aluminum tubing, clear acetate for the cab glass, colored acetate for the bug deflector, and guitar string for the antennas. He used various diameters of wire for parts such as grab handles, mirror braces, chain hangers, and U-bolts;



According to Mark, his oil field models are "70 to 90 percent scratchbuilt," and his Kenworth C-500 is typical. The numerous cables, chains, and custom-fitted lights are common extra equipment on these hardworking rigs.

American Industrial Models* screening for step treads and tool trays; and American Industrial Models muffler heat shield material.

"The air cleaner caps are sections of Chapstick lids, while the hoses are sections of flexible straws," according to Mark. "The curved exhaust stack tips and dents on the bumper and bed are heat formed. Most of the model was assembled with Testor liquid cement,

Micro Weld, and Duro E-pox-e 5. I also used Squadron Green Putty. The balsa floorboards were gouged, splintered, and damaged with the rough edges of various tools."

Mark painted the truck cab, chassis, and wheel hubs with Sherwin-Williams KEM transport enamel (mixed to match the M & R trucking colors), using a Badger 150-3 HD airbrush. K Mart flat black spray paint was used on the bumper, winch tower, and bed. K Mart flat white and Testor chrome silver spray cans were also used.

"Floquil paints — mainly rust, light earth, and weathered black — were used for weathering," Mark said. "Polly S mud and Oily Black weathering paints

were used to stain the balsa floorboards on the bed. Oil field trucks take a tremendous beating, so weathering a model like this one makes it much more realistic."

The M & R trucking logos were produced photographically, while truck numbers are Microscale decals. Mark made the Alberta license plates with Rapidograph technical pens, felt-tip pens, and a Leroy lettering set, drawing the designs on adhesive-backed paper.

Mark believes that "the most outstanding features of this model are the semi-scratchbuilt cab modeled after Kenworth's optional steel construction cab; the winch tower with chains and rigging; and the rear wheel and tire assemblies cast in fiberglass mounted on an operable Hendrickson walking-beam suspension, all scratchbuilt." **FSM**

*American Industrial Models, Box 165, McConellsburg, PA 17233.

Building a better Mustang

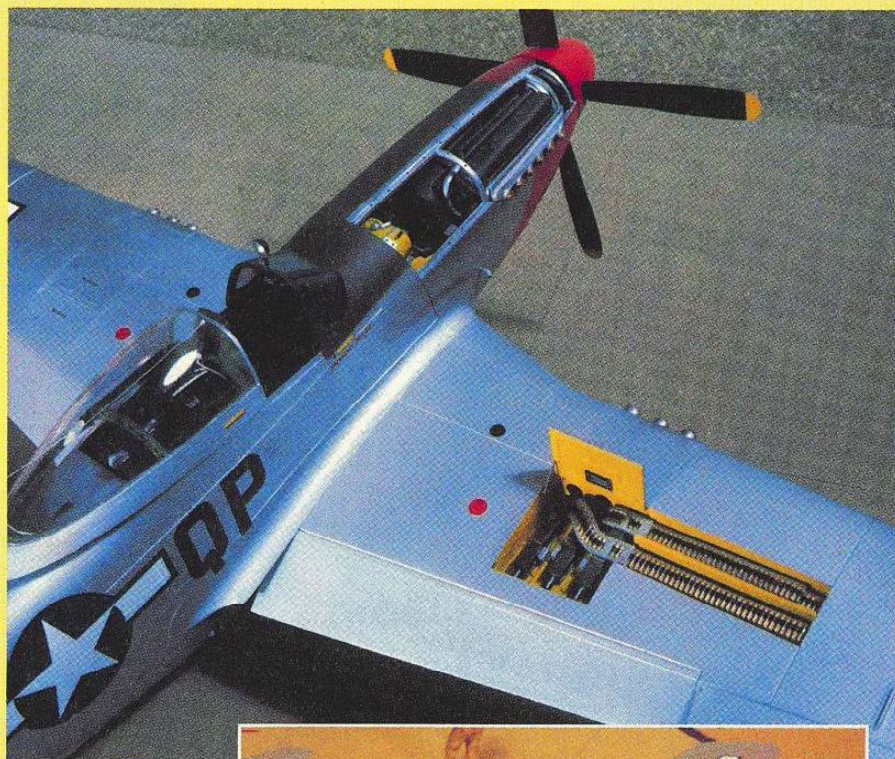
Monogram parts and a little scratchbuilding improve Hasegawa's 1/32 scale classic

BY JACK SMITH

THIS IS NOT just another warmed-over P-51D article; it's aimed at the serious Mustang fanatic, but it will also help modelers building Mustangs in any scale.

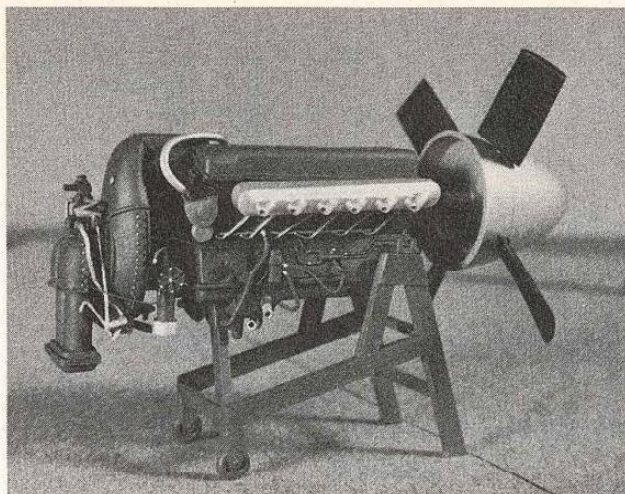
Model magazines have probably devoted more pages to photos and modeling information on the P-51 than any other aircraft and rightly so. In model form, it's a perennial best seller and will remain so as long as its mystique survives.

Since the Mustang is one of my favorites, I wanted to make a super-detailed model for my collection. I selected the Hasegawa 1/32 scale kit (No. 1086) since it's the most accurate in that scale and readily available. But no kit is perfect, so I also bought Monogram's Phantom Mustang (No. 5701) for detail parts. Monogram has recently re-released the basic silver plastic version of the kit in its Heritage Edition series (No. 6054). The eight steps on pages 23 to 27 show the modifications I made to the kit.



The left side of the author's model was left unopened to preserve the personal markings on the aircraft. The right side (above and right) show added details in the engine compartment and gun bay. Note dropped flaps, static ground wire below tail, and rearview mirror.



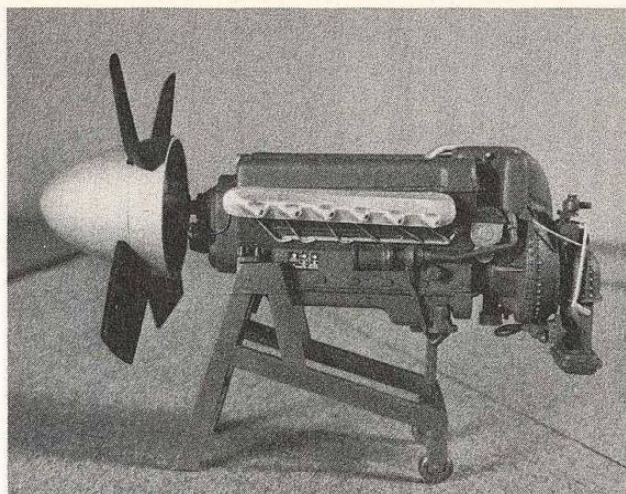
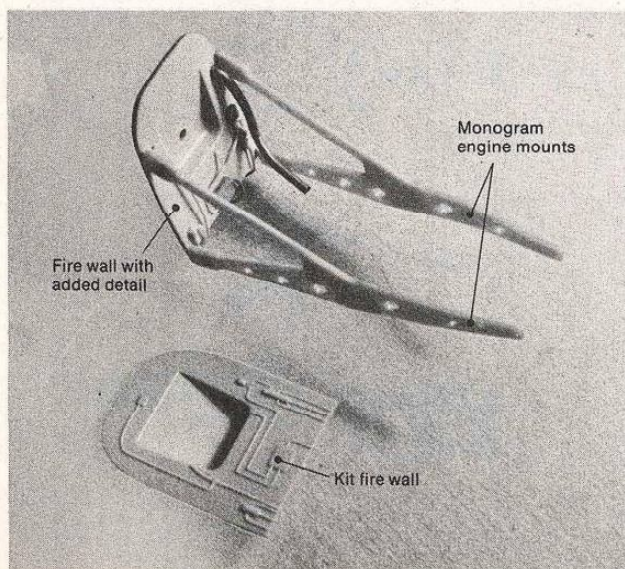


Step 1. Engine and engine compartment. Since the aircraft I modeled had personal markings on the left side, I exposed the engine detail on the right. I cut the top cowl in half and glued the left half to the left fuselage half. The photos show both sides of the spare engine I built.

I studied photos of the Rolls-Royce Merlin V-12 and added details that would be visible through the open cowl. I used lots of stretched sprue for oil lines, coolant lines, and throttle linkages. Monogram's supercharger section was grafted on to the engine block after reshaping the top to an accurate contour. I also used the Monogram reduction gear housing on front of the engine. The engine assembly was painted dark gray, FS 16081. Intakes, drains, and a stretched sprue seam were added to the expansion tank.

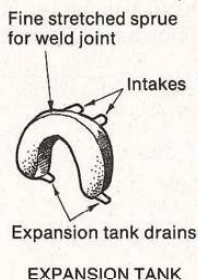
I wanted better detail on the fire wall, so I made a paper sketch of what raised detail was molded on, then sanded off the detail. Holes for hydraulic hoses and a mounting hole for the Monogram oil tank were drilled in the fire wall, then I rebuilt the detail from the sketch using sheet styrene and stretched sprue.

The Monogram engine mounts were trimmed to fit and glued to the fire wall — I checked the fit by placing the completed engine between them. I painted the engine mounts, fire wall, and oil tank chromate yellow and glued the oil tank to the fire wall.

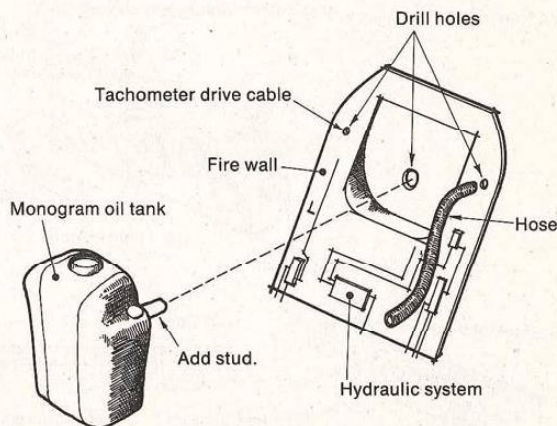
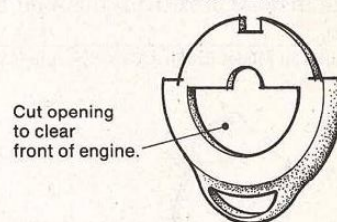


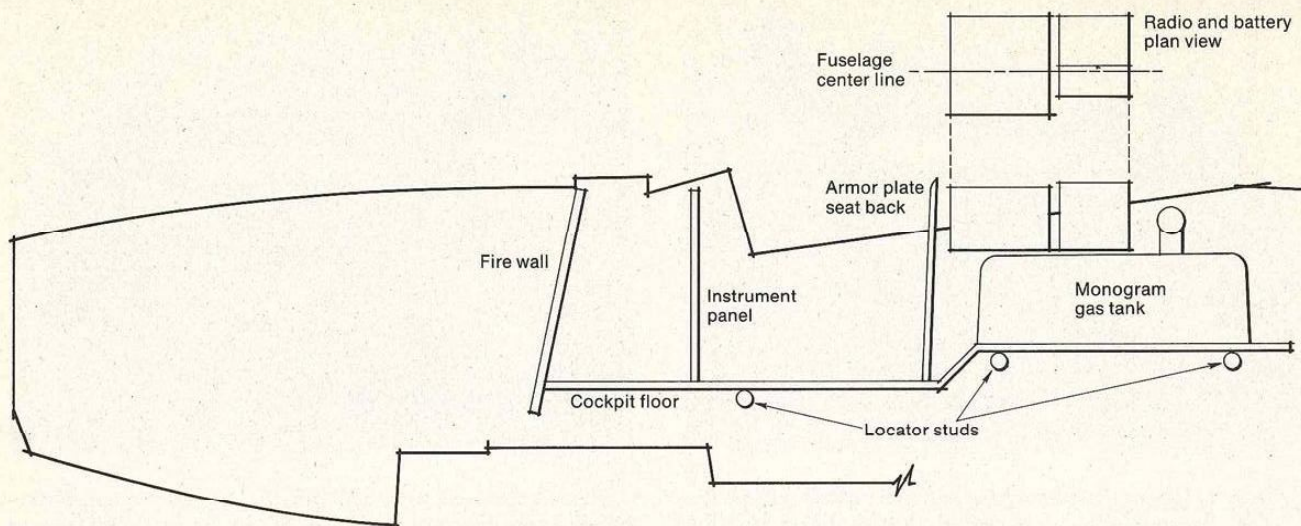
Next, I thinned down the plastic behind the small perforated intakes on both sides of the lower cowl and used a pin vise to drill through from the outside. The inside was then sanded smooth to eliminate rough edges. After thinning and drilling, these filters were fragile so I had to be careful not to damage them. The cowl framework holes were drilled out after I referred to photos to establish the spacing. I cut out the front part of the nose (part No. C13) to clear the reduction gear housing and then painted the inside of the cowl aluminum.

I tack-glued the fire wall and cockpit floor together and positioned them in the right fuselage half. A few locator studs attached to the fuselage halves under the cockpit floor prevent the unit from slipping during final assembly. Then, with the engine in place, I test fit the assembly between both fuselage halves.



Hasegawa part C13





Step 2. Cockpit. After this test fit, I detached the cockpit floor from the fire wall to work on detailing the cockpit. The appearance of the cockpit can be enhanced considerably by adding Waldron's cockpit placards and seat belt buckle sets.* The instructions with the placards show how to make changes to the instrument panel and consoles for a more accurate interior.

I made paper templates of the cockpit sides, marking the location of the instrument panel and armor plate behind the seat. Using cockpit photos, I marked all the equipment I wanted to install on the templates and then transferred these locations to the inside of the fuselage.

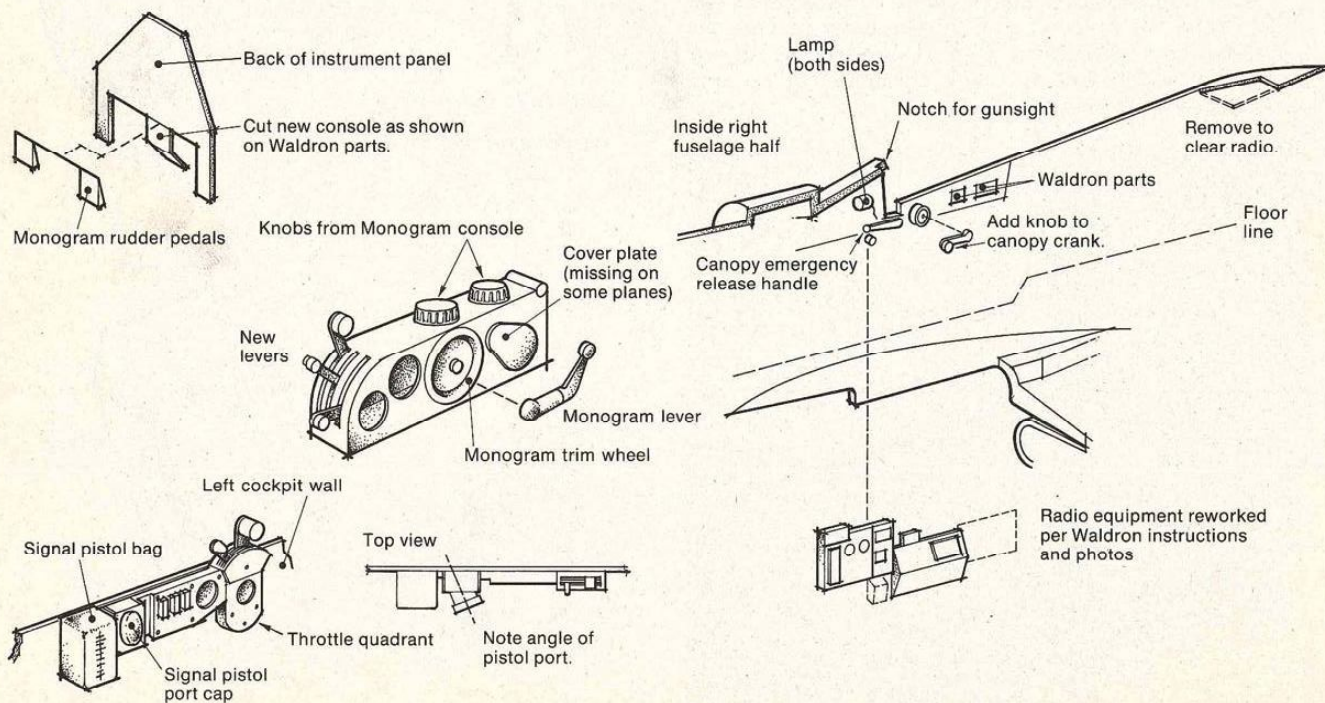
I replaced the center console under the instrument panel using parts in the Waldron placard set as a guide. I hung Monogram's rudder pedals behind the center console instead of resting them on the floor as given in the kits.

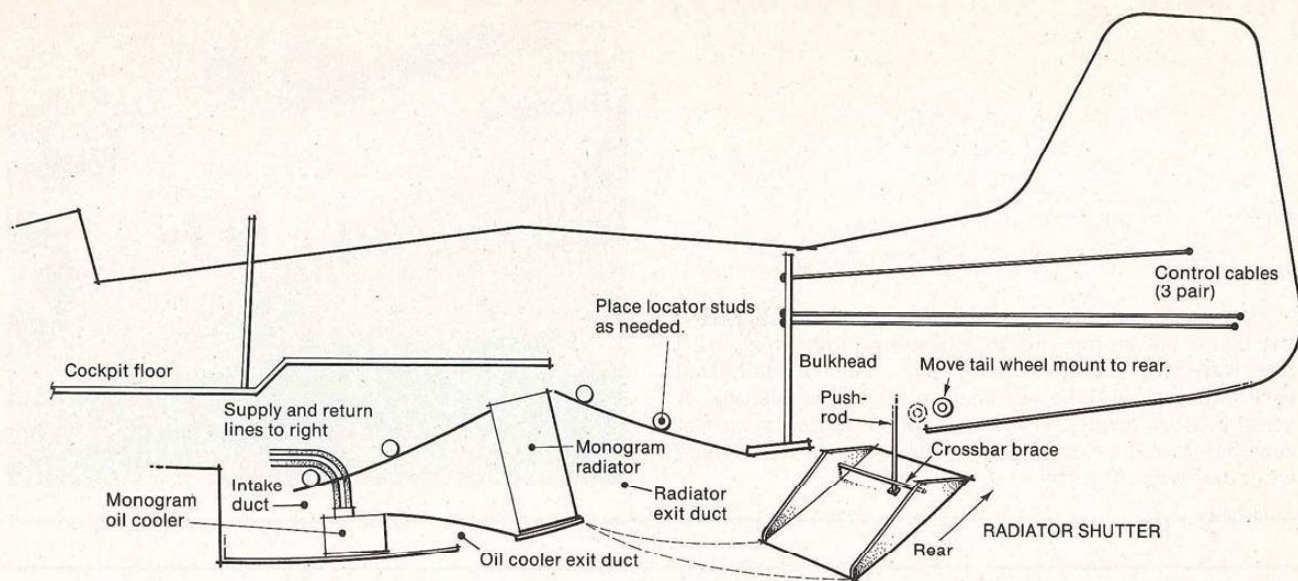
*Waldron Model Products, 1358 Stephen Way, San Jose, CA 95129.

The cockpit floor is plywood but covered with sheet aluminum, so I sanded off the wood grain and added more detail from photos. The cockpit interiors of World War Two P-51s were painted Interior Green so I used Testor Model Master FS 34151. Postwar units painted floors with a black, anti-slip paint.

I painted the instrument panel flat black, then dry-brushed instrument needles and numbers cream (white with a yellow cast). The glass faces were simulated by a drop of Micro Kristal-Kleer on each instrument.

The drawings show additional improvements to the interior using kit parts and details from Monogram's Mustang. I used Monogram's stick, seat, headrest, and radios. I cut off the back deck from the Hasegawa interior and made a new deck from sheet styrene, then stacked the Monogram fuel tank and radios on it. As I attached the interior parts, I test fit the floor assembly periodically to check clearances.





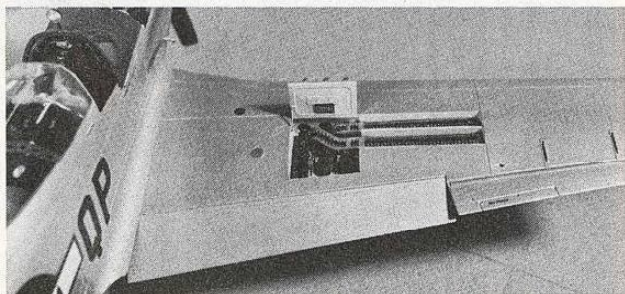
Step 3. Radiator scoop and tail wheel well. I sanded the inside of the radiator scoop smooth and installed Monogram's oil cooler and radiator. Sheet styrene was used for the ductwork inside the scoop, again test fitting the fuselage halves before final assembly. I used stretched sprue for the oil lines to the cooler and the braces and pushrod in the intake and exit ports.

The Monogram tail wheel is superior to Hasegawa's so I mounted it into the fuselage after repositioning the mounts. Next, I made a bulkhead forward of the tail wheel well. The control cables for the elevator and rudder travel through the well, so I drilled six holes for them in the bulkhead and made the cables from stretched sprue. I made ball ends on each cable using a candle flame and passed each cable through the bulkhead, se-

curing the other ends with a drop of Micro Weld while keeping the cables taut until the glue set. The inside of the scoop and tail wheel well were painted aluminum.

With the interior of the fuselage finished, I placed the engine in the mounts and attached the fire wall to the cockpit floor. This entire assembly was then cemented into the right fuselage half.

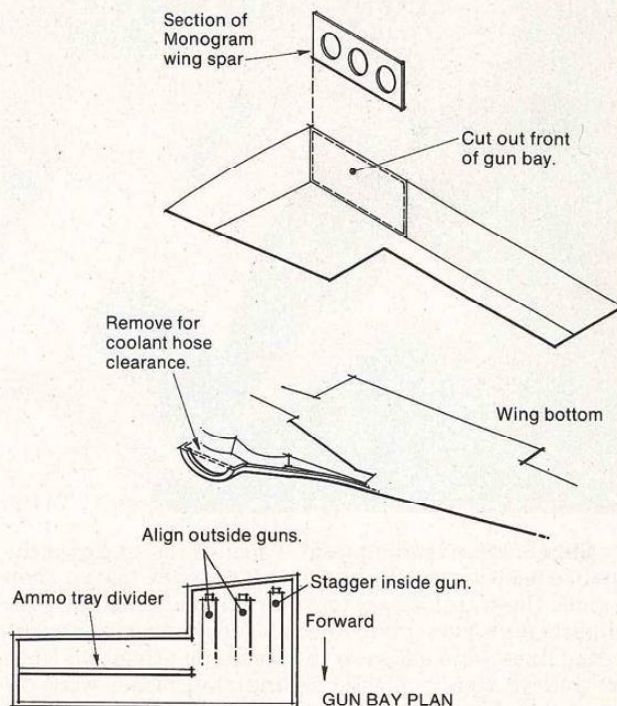
I glued the fuselage halves together with Micro Weld applied with a syringe. As the gluing proceeded around the fuselage, I held the halves together with several pieces of tape. After the assembly had dried, I removed the tape and sanded the joint smooth. Next, I cut a notch in the instrument panel hood for the gunsight. The instrument panel hood and inside of windscreen were painted flat black, and the windscreen installed.

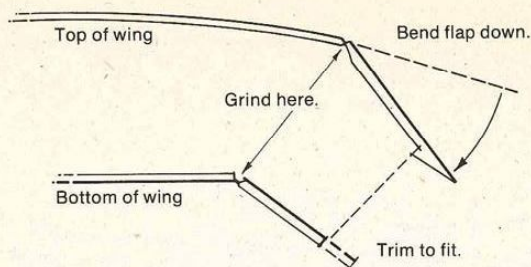


Step 4. Gun bay. The shell ejector chutes were ground thin and opened with a knife. I left the right gun bay open so all the superdetailed areas were on the right side of the model. Before installing the guns, I grafted a section of Monogram's wing spar into the forward wall of the bay. The interiors of the gun bay, gun bay doors, and main gear wells were painted chromate yellow.

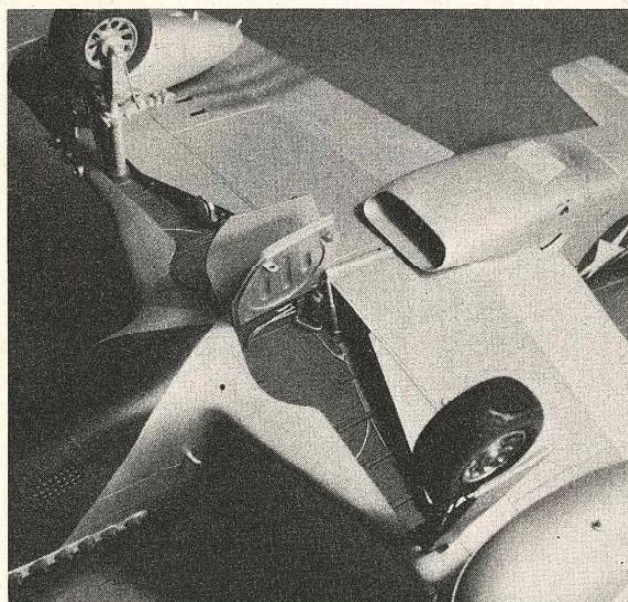
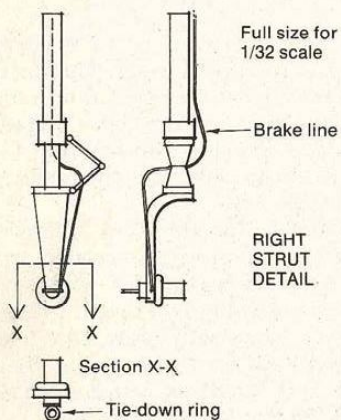
Close study of photos showed the guns were staggered; the inside guns had extended barrels so they lined up with the leading edge of the wing. I added solenoids to each gun before positioning the ammo belts.

After completing the gun bays and detailing the wheel wells, I ground out the front of the lower wing panel to clear the coolant and hydraulic lines projecting from the engine beneath the fire wall.

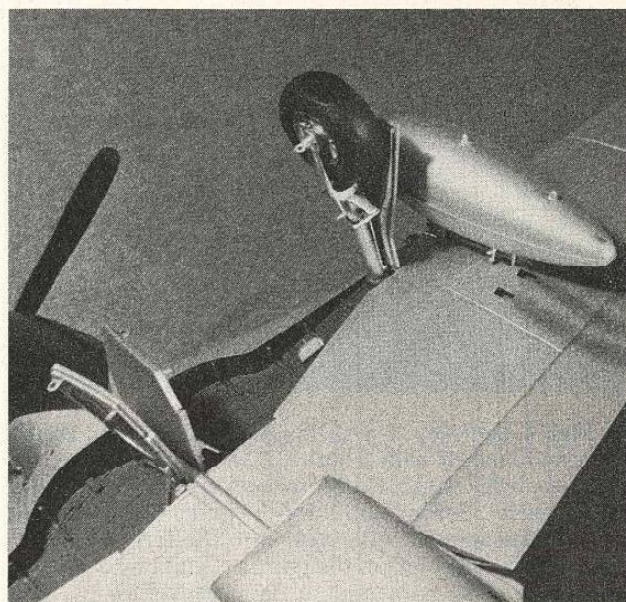




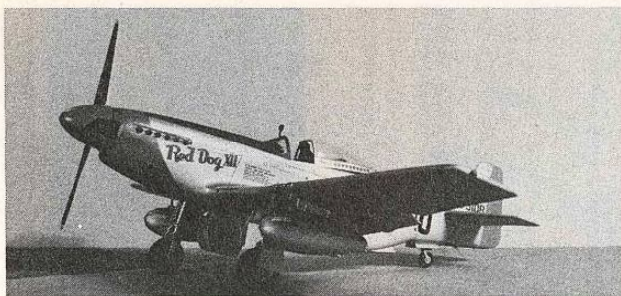
Step 5. Flaps. I dropped the flaps by grinding across the inside of the top and bottom wing hinge lines until they were thin enough to bend down. The bottom half of each flap needed to be trimmed to fit in this position. A small piece of sheet styrene was added to the top part of each flap and the corresponding surface on each fuselage wing root was cut away.



Step 6. Main landing gear. I opened the spokes of the main wheels by grinding each half from the inside. Then I glued the wheel halves together and flattened the tires slightly for a more realistic loaded look. Stretched sprue brake lines were added to the struts and tie-down loops off pulleys from a plastic sailing ship model were cemented to the strut end of each axle.



The remaining construction was straightforward. The navigation light was cut off the rudder and replaced with a bead of white glue after painting. I used 600-grit emery paper to tone down the fabric texture on the control surfaces. Only a hint of texture should remain after painting. Fabric-covered elevators were replaced by aluminum on later model P-51Ds.



Step 7. Paint and decal. I sanded off all rivets from the wings except for the prominent heads at the fuel tank filler ports. I used stretched sprue to fill in the heavily scored wing panel lines instead of putty which might shrink later. I toned down the rivets on the fuse-

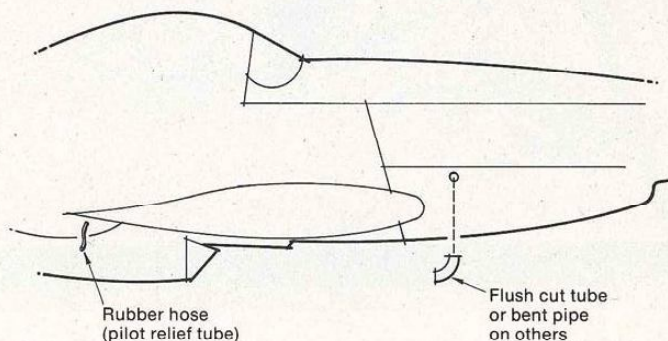
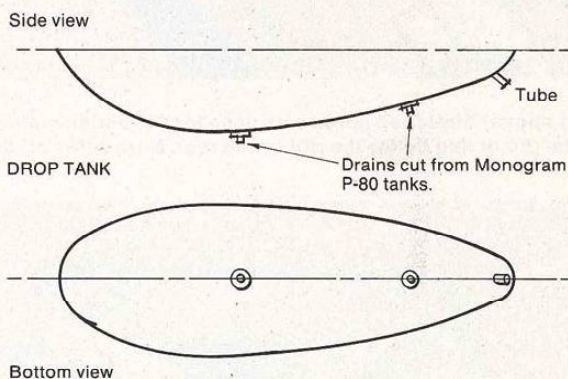
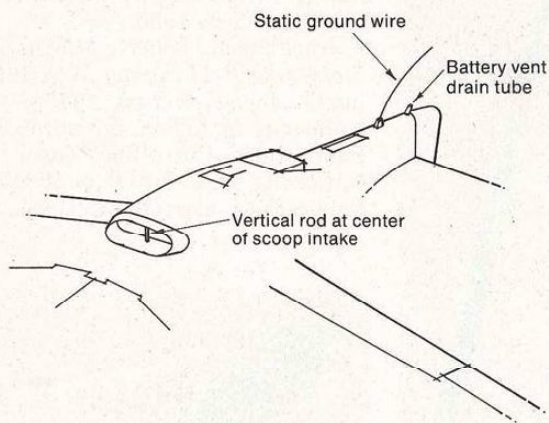
lage, leaving the cowling and wing fillet fasteners alone.

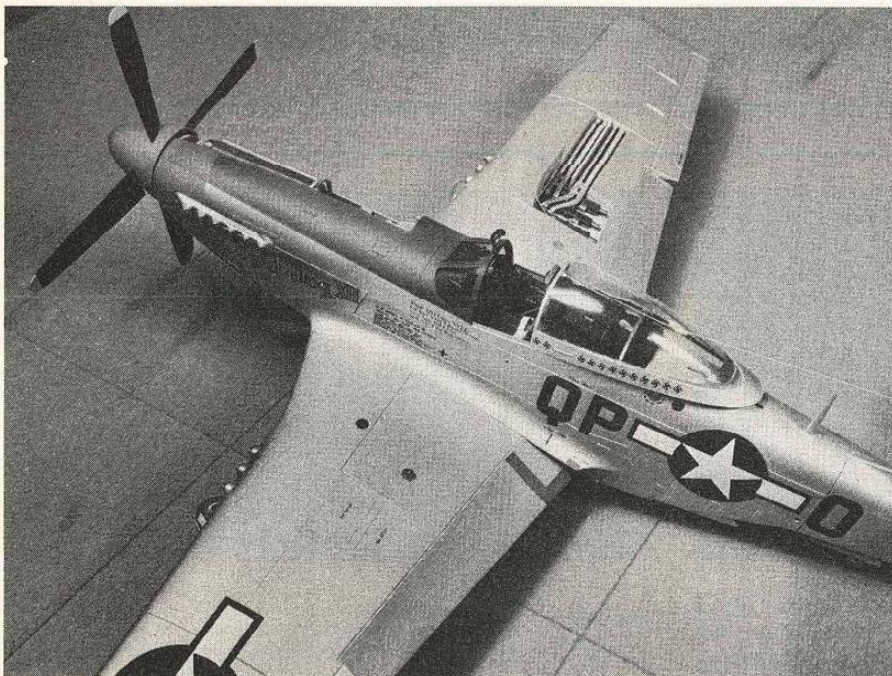
Factory fresh WWII Mustangs had a lot of panels painted aluminum. The entire wing (less flaps), main landing gear doors, strut covers, coolant shutter doors, and fabric surfaces were all painted. As servicing was performed in combat zones, the engine cowling panels were often painted aluminum to cover scratches. Some aircraft had their invasion stripes covered with aluminum paint when the orders came to delete them. Photos of the particular plane you are modeling are the best source to determine how much of it was painted.

I sprayed my model with Pactra Flat Aluminum followed by two thin coats of Micro Flat which had been carefully drained, leaving flat solids in the bottom of the bottle. This produced a clear (not yellowish), gloss coat. After the paint was dry, I applied Microscale decal sheet No. 32-6.

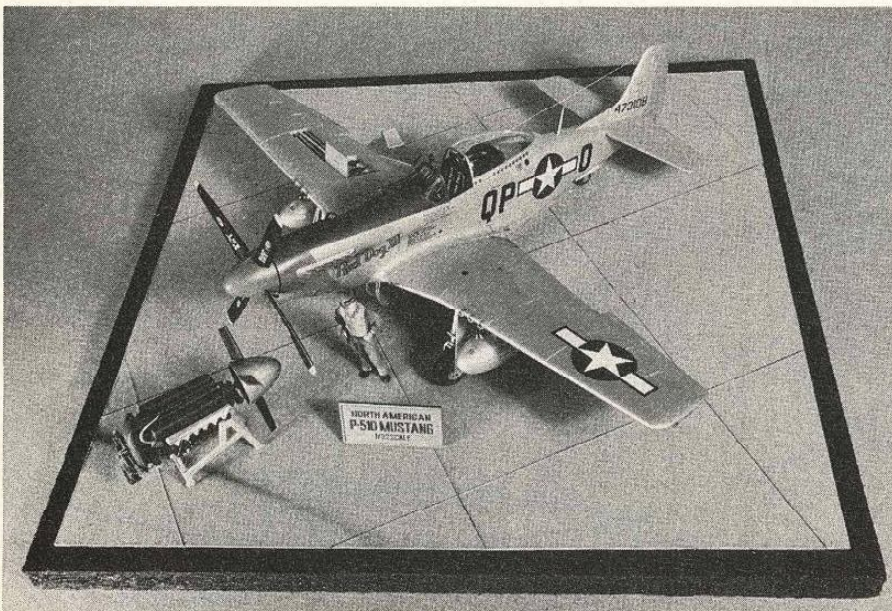


Step 8. Details. After the model was completely dry, I attached the landing gear struts and doors, prop, and canopy. On the real P-51, the aerial passes through a small, teardrop-shaped housing with a small pulley inside. I used stretched sprue for this and the IFF (Identification-Friend or Foe) antennas, pilot's relief tube, battery vent tube, and static ground wire.

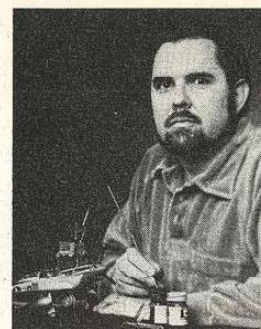




(Top and above) Stretched sprue was used for the aerial, static ground wire, and pilot's relief tube projecting below the right wing root. Note vents on drop tank.



(Above and right) Jack built an additional detailed engine along with a workstand for this display. The 54 mm pilot figure is from Squadron/Rubin.



Meet Jack Smith

Jack has been an architectural draftsman for 25 years, which he feels has helped him develop the patience that he applies to his modeling. He's been modeling since age seven, and he reports that he swept the first model contest he ever entered — at age 12! Jack started with static display models and graduated to flying control line scale models. He raced Corvairs and dirt bikes, then returned to plastic modeling in 1975. Jack is married and lives in Charleston, West Virginia, where, in his spare time, he also dabbles in photography.

The author wishes to thank his wife for "understanding," Steven Burgess for his photo portrait, and the 130 T. A. S. of the West Virginia Air National Guard for allowing him to take pictures of their P-51D.

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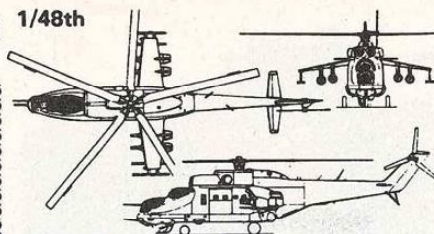
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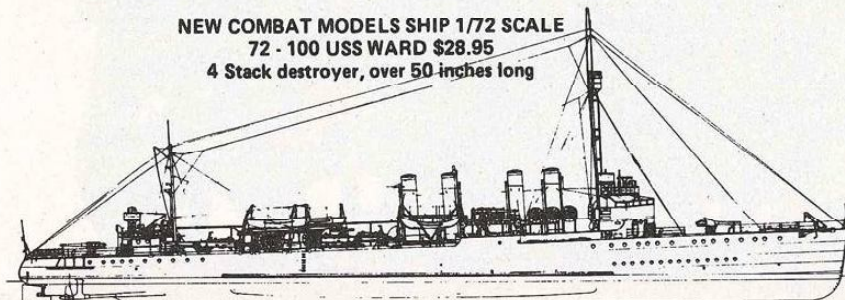
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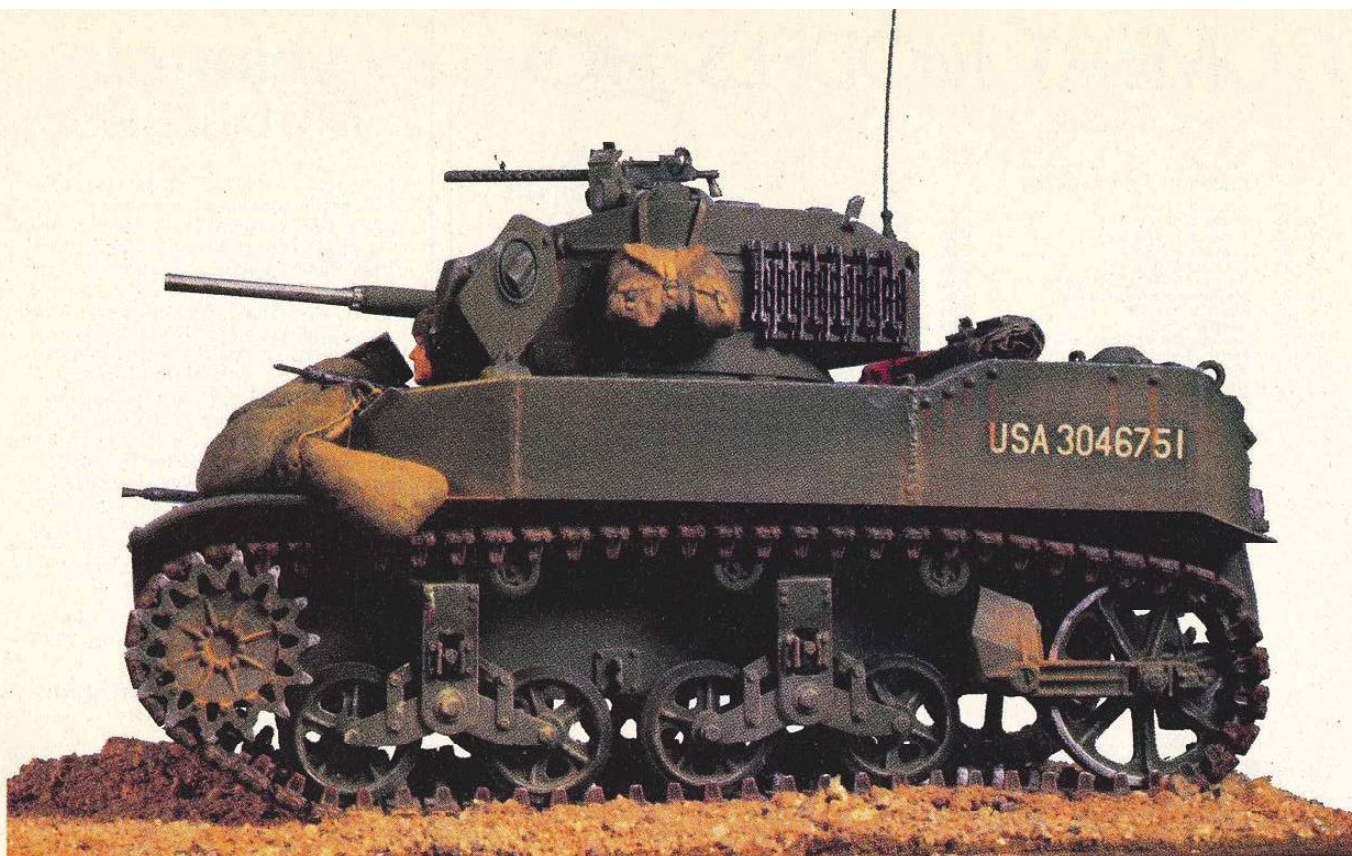
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Terry's M5A1 is an exercise in detailing, and does not represent a specific vehicle or theater of operations. His techniques can be applied to any armor model.

Detailing Tamiya's M5A1 Stuart Light Tank

Improving an already-good model with easy-to-make details

BY TERRY SUNDAY

THE U. S. M5 LIGHT TANK developed as a result of two almost simultaneous programs to improve the M3/M3A1 series of light tanks. In July 1941 development of alternate power plants to the 250-horsepower Continental 7-cylinder radial aircraft engine used in the M3 was authorized. General Motors built a prototype vehicle, designated the M3E2, which was powered by two Cadillac automobile engines with automatic transmissions. Tests at Aberdeen Proving Grounds in the summer of 1941—including a 5,000-mile endurance run—were successful, and production of the vehicle as the Light Tank M4 was approved in October 1941.

The second M3 improvement program was replacement of the original riveted hull with an all-welded, homo-

geneous armor hull. Had it entered production, the welded-hull version would have been designated the M3A1E1, but the Ordnance Department recognized the redundancy in its two light tank modification programs and, in November 1941, merged them. The result, completed in April 1942, was the Light Tank M5. The prototype was superior to the M3 and M3A1 in nearly all respects, and Ordnance authorized production. By the end of the year, 2,074 M5s were turned out at two Cadillac plants and one Massey-Harris factory.

The M5A1 was a result of yet another program to improve the M3. Ordnance still wanted a light tank powered by the Continental radial engine, so in April 1942 American Car & Foundry was commissioned to develop the M3A3, which would house the Continental engine in a welded hull similar to the M5. During the M3A3 program the M3 tur-



Much of the added detail on the model is in the form of external stores and extra equipment. In the European theater, many M5A1s were heavily sandbagged to provide additional protection from German Panzerfaust and Panzerschreck antitank rockets. The orange fabric banner is an air-identification flag meant to protect the Stuart from attack by friendly aircraft.

ret (also used on the M5) was redesigned. The new turret was a marked improvement, incorporating an extension at the rear to house the radio set, redesigned hatches, and an improved gun telescope mount. Beginning in November 1952 the M3A3 turret was fitted onto M5 chassis on the production line, and the resulting vehicle became the M5A1. A total of 6,810 M5A1s was built through June 1944.

By 1942 many German tanks were uparmored to the point where they were virtually impervious to the M5A1's 37 mm M6 gun at the typical combat ranges. As a result, in Europe the M5A1 was largely restricted to missions where it would not be engaged in tank-versus-tank combat without considerable support. The M6 gun proved adequate against the lightly armored Japanese tanks, however, and the M5A1 played an important role in the Pacific campaign.

A good kit to start with. Tamiya's M5A1 (kit MM-3597) is an excellent model, and my main goal in this project was simply to improve it wherever possible. My model was not intended to represent any specific M5A1, but instead was an exercise in detailing. The techniques and materials are applicable to any armor model.

Working from the ground up, I assembled the running gear pretty much straight from the box. Although nearly impossible to see on the finished model, the open areas on the underside of the sponsons above the tracks were closed in with pieces of sheet plastic. I decided to leave the side skirts off, since M5A1s were rarely seen with them, and I cut off the front portions of the fenders even with the front of the glacis plate, Fig. 1, to match wartime photographs.

I also left off the optional Culin hedgerow-cutting device, revealing the lack of raised identifying numbers and letters on the lower front hull plate. Using a brand-new X-acto knife blade, I carefully trimmed suitable characters from the molded "Made in Japan 1977" on one of the parts trees, then attached the individual characters to the hull with liquid cement, Fig. 1.

The hull sides lacked a couple of vertical weld beads and six hefty rivets on the plate over the idler wheel. I formed the weld beads from a thin ribbon of Squadron plastic putty, then textured each bead with repeated knife strokes, Fig. 2. The rivets were shaved off an old Pzkw III gun mantlet and glued in place.

Smaller hull details. Other details added to the hull include hinge pins for the two drivers' hatches, locking levers for the fuel and oil filler caps, and bolt heads on all the molded hinges for the engine compartment access doors. I trimmed off all 20 or so tiny equipment



Both photos: U. S. Army Signal Corps

The gap in the bushes behind this M5A1 is proof that the Culin device hedgerow cutter worked. Note the heavy sandbagging on this vehicle of the 705th Ordnance Co., 8th Infantry Div., photographed on July 21, 1944. A special welded frame has been added on the glacis plate to hold sandbags, while others are wired in place. The open hatch shows off the driver's periscope and other hatch bottom details.



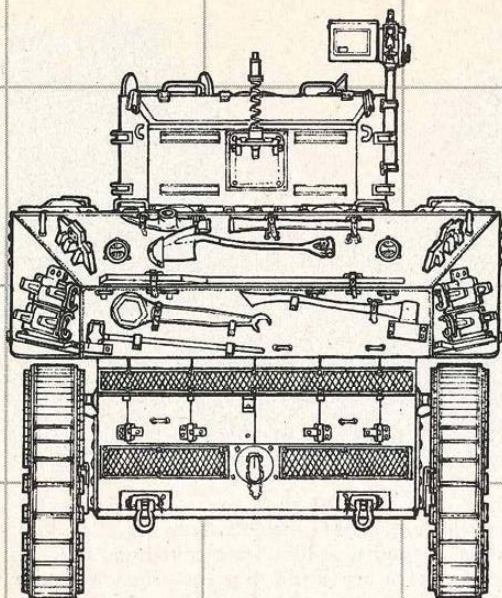
An MP directs traffic as an M5A1 of a cavalry recon squadron roars through St. Paul de Verney, France, on July 17, 1944. This tank has a gas can mounted on the rear of the sponson similar to the one on the model. Note the abundant stowage on the rear deck, the bags hung from the turret, and the lack of fenders. As on many M5A1s, this Stuart lacks the armored shield around the turret machine gun; instead, the M1919 .30-caliber machine gun is fitted on an exposed mount on the turret side. What appears to be a nonstandard gun mantlet shape is actually the open right-hand hatch cover.

tie-down fittings molded on the hull, then replaced them with new parts made from extremely thin stretched sprue, Fig. 3. Some stretched sprue is brittle and can snap if you try to bend it, and the trick in working with it is to warm it by rubbing it between your fingers, which makes the sprue much more pliable. I formed the sprue into a flattened "U" shape by bending it around the flat part of the tip of needle-nosed tweezers. Each fitting was attached to the hull using a liberal dab of liquid cement, which becomes invisible after the model is painted.

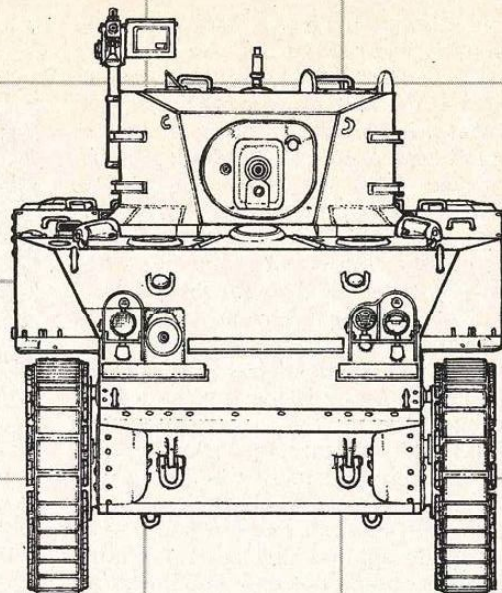
Scratchbuilt brackets for the wrecking bar and sprocket wrench were

added to the rear of the hull, and the corresponding cast brackets molded as part of these tools were shaved off. The kit mattock, ax, and shovel were replaced with Combat Series brass parts, attached with super glue after the mounting pins were ground off with a Dremel Moto-Tool. These tools are not arranged exactly the way they were officially stowed on the M5A1, but the arrangement, Fig. 4, was the only way the parts would fit. There was considerable variation in external equipment stowage on M5A1s, so this arrangement is certainly plausible.

Next I added a gas can rack to the right rear corner of the hull, Fig. 5. The



1/35 SCALE



About the scale drawings

These drawings depict a typical M5A1 in late 1944. Like many M5A1s in wartime photos, it has no hull side skirts or Culin device, and also lacks the armored "tub" on the right side of the turret. Pressed-steel road wheels are shown, but some tanks in photos had a mix of older spoked and new pressed-steel road wheels on the same bogie, depending on what spares were available. The grouser block racks on the turret sides are shown, but the grouser blocks themselves, as well as the tow cable, are omitted for clarity. The tank in the drawings also lacks the large bustle box on the rear of the hull found on many late-model M5A1s.

Terry Sunday

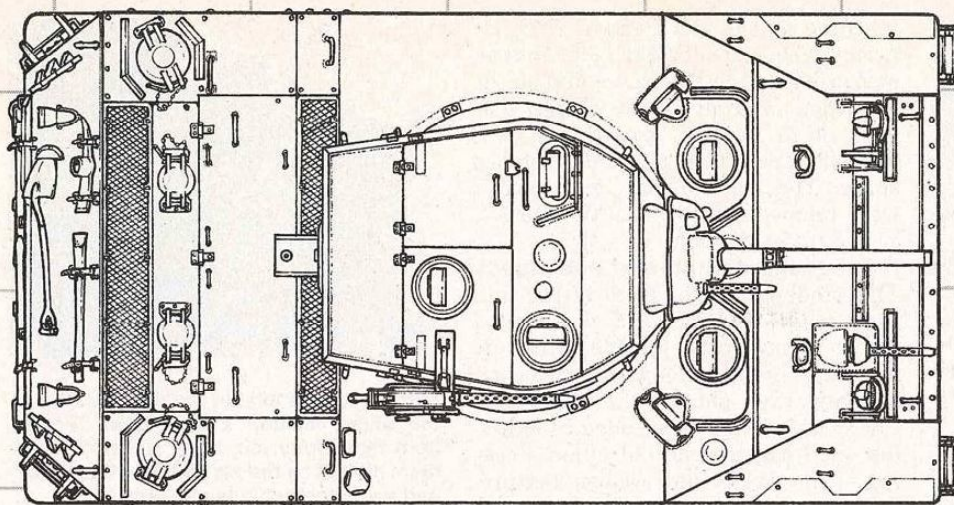
M5A1 STUART LIGHT TANK

Length:	15' 10½"
Width:	7' 6"
Height:	7' 10½"
Weight:	17 tons
Crew:	4 (commander/loader, gunner, driver, co-driver/machine gunner)
Engines:	Two Cadillac Series 42 V-8
Horsepower:	220 hp (total) at 4,000 rpm
Fuel:	Gasoline
Armament:	One 37 mm M6 gun, Three .30 caliber MG, one in ball mount on glacis plate, one coaxial, and one on external turret mount.
Ammunition:	147 M151 37 mm armor-piercing rounds; 6,500 .30 caliber
Armor thickness:	13 mm to 63 mm
Road speed:	36 mph
Operating range:	100 miles
Ground pressure:	12½ lb/square inch
Number produced:	6,810
Production period:	11/42-6/44



(Left) Infantrymen of B Company, 1st Battalion, 114th Infantry Regiment, 44th Division, climb aboard an M5A1 to attack Struth, France, in the Lohr area, on November 28, 1944. The sandbags on the glacis plate have been covered with a thick layer of mud. This Stuart is fitted with metal-cleat tracks instead of the more common rubber-block type. The metal track added more than half a ton, but provided much better traction, especially on ice. (Right) An M5A1 in action near Coudray, France, on August 8, 1944. Note the Culin device with a bracket for attaching the tow cable, grouser blocks on the turret side, and the open commander's hatch. The turret machine gun appears to be missing, but the mounting post can be seen above the top of the turret.

Both photos: U. S. Army Signal Corps



PREPARED FOR
FINESCALE MODELER

BY
Terry Sunday

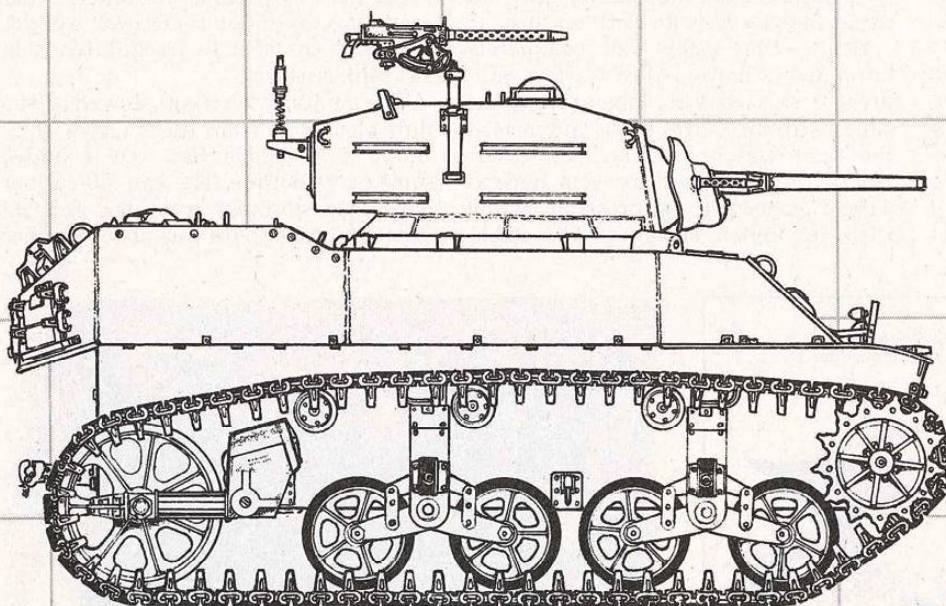




Fig. 1. Omitting the Culin hedgerow cutter makes the bare lower front hull plate prominent on the model, so Terry added raised cast identifying numbers shaved from one of the kit's molding sprues.

rack was made from Evergreen plastic strips, with bolts shaved off a drive sprocket from my trusty old Pztkpfw III kit. The gas can handles were thinned down and a cap, hinge, and cap retaining cable were added.

The headlight guards furnished with the kit were much too thick, so I fabricated thinner ones, Fig. 5, from Evergreen strips and bolt heads shaved off other models. The barrel of the bow machine gun was replaced with one cut from the .30-caliber M1916A6 light

machine gun in the Tamiya U. S. Infantry Weapons Set (MM-121). This set also provided the M3 grease gun on the sandbags in front of the driver. The wire stock on the grease gun was formed from a thin piece of stretched sprue. The ends of both gun barrels were reamed out with the tip of a No. 11 X-acto knife blade.

Sandbags and stowed equipment.

The sandbags on the front of the hull were made from bean-sized pieces of ribbon epoxy putty, kneaded with my fingers to properly blend the two components, then shaped into sandbags. The cloth texture was added by pressing each bag into an old nylon stocking — the nylon adds woven texture, but doesn't leave tiny fibers adhering to the epoxy. After texturing, I draped each bag over the hull, taking care not to rub out the delicate cloth texture.

Before the epoxy had completely hardened (a matter of just a few minutes), I scribed stitching around the edges with an X-acto knife and formed the final contours of the bag. Areas where the cloth texture was marred were touched up by pressing firmly with the nylon stocking. This tech-



Fig. 2. Extra details on the right quarter of the Stuart include a weld bead formed from filler putty, six large rivets (four of them hidden by the air ID flag in this view), and a scratchbuilt gas can rack.

nique produces realistic sandbags that seem to sag under their own weight, and that conform to irregularities in the tank surface.

The ammunition boxes stowed on the hull also came from the Tamiya U. S. Infantry Weapons Set, but I added some extra details. The two .50-caliber boxes (presumably used for general stowage, since there was no .50-caliber

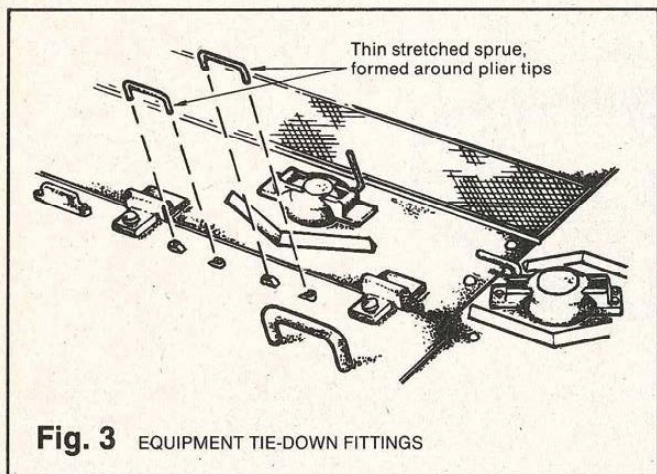
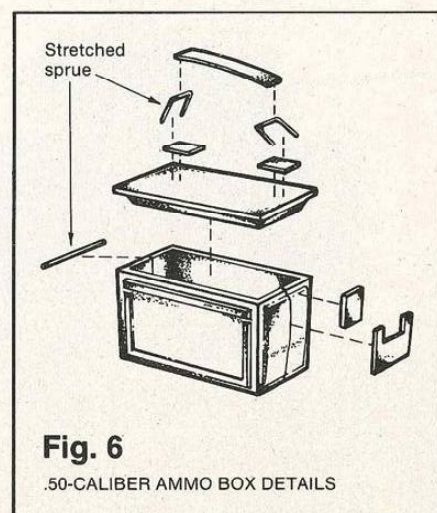
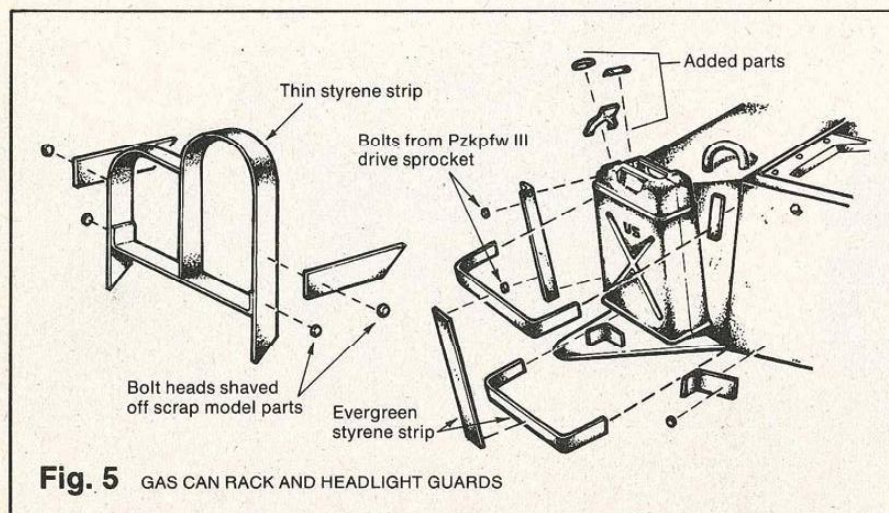


Fig. 4. The mattock, ax, and shovel are Combat Series brass parts, while the other tools are from the Tamiya kit, dressed up with scratchbuilt brackets. Note the numerous tie-down fittings and the battered pail hanging from the towing pintle.



weapon on this tank) have scratchbuilt handles, latches, and hinges made from Evergreen styrene strip and stretched sprue, Fig. 6. The two .30-caliber boxes received similar treatment, and on the ammo box attached to the turret machine gun I positioned the latch in the open position. The sides of this open box were thinned by scraping with a modeling knife.

Since the driver's hatch was to be open, I added details inside of it. The handle was formed from stretched sprue, as was the latching pin. A corresponding recess to engage the latching pin was added inside the hatch opening near the driver's right shoulder. The periscope was detailed by adding various switches and levers to the kit part. The driver is from Tamiya's U.S. Army Tank Crew (MM-104), with his torso and arms trimmed to fit the Stuart. I mounted the figure on a plastic plate glued securely to the inside of the hull. Twenty extra bits of detail (straps, buckles, snaps, and intercom wiring) were added to the driver's helmet.

Reworking the turret. I built the basic turret structure straight from the box, with only a little putty to fill small gaps. The coaxial .30-caliber machine gun was "removed for maintenance" and the gun opening stuffed with a tissue-paper rag to keep out dirt and rain. Figure 7 shows how I reworked the radio antenna base with several pieces of stretched sprue and an HO scale railroad truck spring. I detailed the turret hatch hinges with tiny pieces of sprue to represent the ends of the hinge pins, and made the lens for the turret spotlight from transparent sprue from an aircraft kit.

Some late-production M5A1s were fitted with a curved steel shield around the turret machine gun position, and the kit comes with one of these. I chose not to install it, since the shield rarely shows up in M5A1 photos. I scratchbuilt the machine gun mount from Evergreen strips, sprue, and a short section of plastic rod; the gun itself is a Combat Series brass part, used straight from the package.

My local hobby shop didn't have the brass cradle for the machine gun in stock, so instead of waiting for it to come in on a special order, I adapted the cradle from the Tamiya U.S. Infantry Weapons Set. This plastic cradle was cast with solid webs between the ribs, so I had to carefully open them up by drilling, scraping, and filing. After adding adjusting knobs and locking levers to the cradle, Figs. 8 and 9, I attached it to the machine gun using super glue. The .30-caliber ammo box and a belt of ammunition, also from the U.S. Weapons Set, completed the machine gun installation.

Hanging from the left side of the tur-

ret is a storage bag from a Tamiya Sdkfz 223, undoubtedly liberated by the crew of this M5A1 for their own use. Its strap is a thinned piece of Evergreen styrene strip. The rolled-up tarp on the rear deck is tissue moistened with a mixture of white glue and water, rolled up when dry, and secured to the deck with white glue, and the straps around the tarp are Chartpak adhesive drafting tape, Fig. 10.

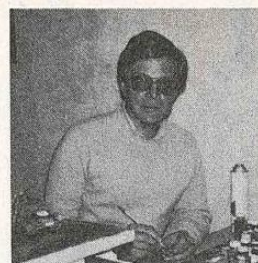
The bright orange air-identification flag draped over the rear deck was made the same way as the tarp: The back side of a swatch of tissue was coated with a thin layer of white glue and the flag was pressed onto the hull until it conformed to all the irregularities beneath it as cloth would. Finally, the bucket hanging on the towing pintle is from the Tamiya Jerry Can set (MM-3526). I dented and bent the bucket with tweezers and files and added a stretched sprue handle.

Painting — by subassemblies. To facilitate painting I built the model in several subassemblies. The hull, except for the running gear, sandbags, gas can, ammo boxes, tarp, flag, and driver, was one subassembly. Similarly, the turret, minus the machine gun, stowage bag, and grouser blocks, was another. The bogies and running gear were assembled separately and attached after everything was painted.

Each subassembly was airbrushed with Humbrol Olive Drab. When thoroughly dry, a thinned black wash was run into the cracks and crevices. The edges of these washed areas were feathered in by brushing over them with the base color, and successively lighter shades of green and pale yellow were dry-brushed over all the raised detail. The edges of the teeth on the drive sprocket were painted silver to simulate wear, and shiny worn surfaces on the rear wheels and the inside of the track was suggested in the same way.

I painted the machine gun and main gun barrels with a mixture of Humbrol Steel and Panzer Gray, which produces a realistic metallic Parkerized appearance. The rubber tires on the bogie wheels and track blocks were painted with a mixture of flat black and gray. Streaks of rust were added at various points, including the track edges, hull rivets, lifting shackles, and other places where paint might be worn away.

The sandbags, tarp, driver's jacket and helmet, and turret storage bag were painted in various shades of green and brown, and the air-identification flag was done in orange with brown shadows and yellow highlights. I find the Humbrol paints very flat, so the normal procedure of overspraying the finished model with a flat finish was unnecessary, and doing so would have diminished the metallic sheen on the



Meet Terry Sunday

Terry Sunday, 34, is an aerospace engineer, amateur military historian, and serious modeler. He writes that he "has been building models off and on since childhood, but has become much more active in the hobby in the last five years." His main area of interest is World War Two military vehicles, with an occasional aircraft from the same era thrown in for variety.

A firm believer in making models as lifelike as possible, Terry strives to put the maximum detail into each project. He told FSM that his devotion to detail keeps his output low — two or three models per year is about the limit. He feels research is a vital part of modeling, and maintains an extensive reference library covering WWII vehicles and aircraft. His models have won awards in local and regional contests.

Terry and his wife Kathy, a CPA, enjoy traveling. His other hobbies include photography, writing, drawing and painting, and pistol shooting. He is working on his first book, a history of antiballistic missile systems. The Sundays live in Aurora, Colorado, with a cat and a Great Dane.

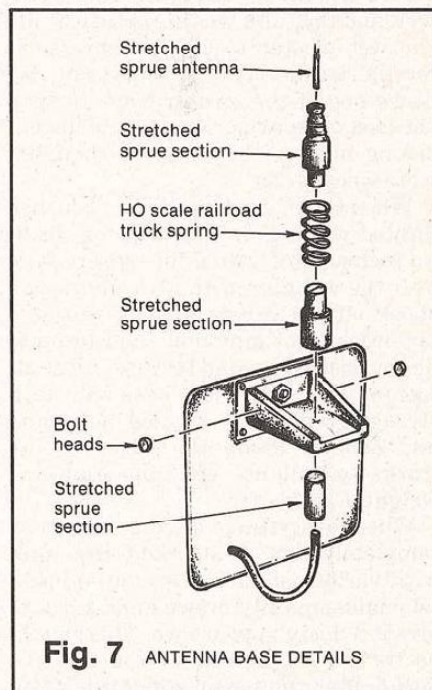


Fig. 7 ANTENNA BASE DETAILS

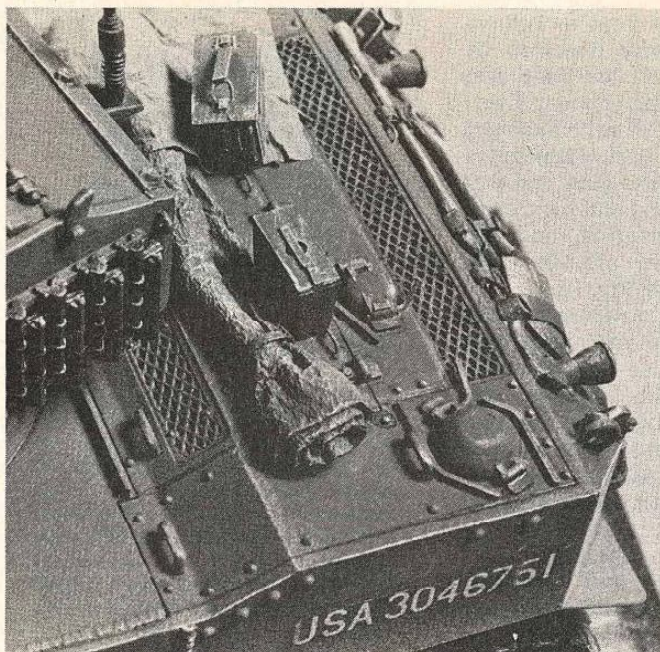


Fig. 10. Details on the rear deck include locking levers for the filler caps, reworked ammo boxes, and a tissue-paper tarp.

gun barrels. To complete the model, I applied the kit decals using the Micro-scale system. I left the turret off until the model was attached to the base, so both turret and hull could be handled by inserting two fingers into the turret ring of each piece, avoiding fingerprints on the paint.

A simple base. I mounted the tank on a simple base made from a stained decoupage plaque. After the stain was dry, the edges of the groundwork area were masked off with tape and the ground contours built up with patching plaster. The larger pebbles were inserted into the plaster while it was still wet, and the tank was also pressed into the wet plaster to create depressions for the tracks. This is important, because one of the easiest ways to spoil the look of an armor model is to have it sitting on top of the ground as though it were weightless.

When the plaster had dried I brushed diluted white glue over a patch about an inch square, sifted fine desert sand over the wet glue with a strainer, then shook off the excess. It took repeated applications of glue and sand to build up the desired ground texture. After attaching the tank to the base with full-strength white glue, I added more sand and pebbles along the edges of the tracks to enhance the appearance of weight, Fig. 11.

When everything on the base was completely dry, I attacked the tank with various shades of ground-up pastel chalks, mainly browns and tans, to give it a dusty appearance. This should be the very last step: If you touch a model after the pastel weathering has

been applied, you'll leave unsightly fingerprints that are nearly impossible to remove!

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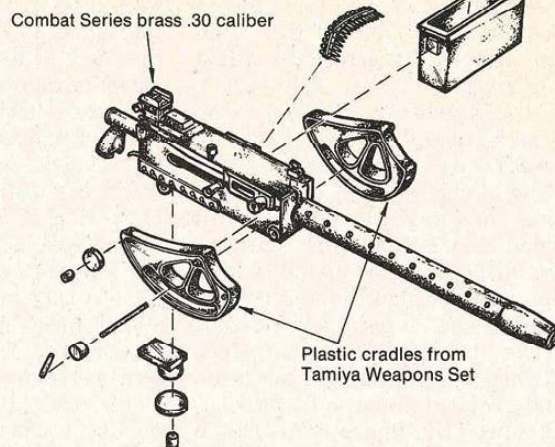


Fig. 8 TURRET MACHINE GUN DETAILS



Fig. 9. The .30-caliber machine gun on the scratchbuilt turret mount consists of a Combat Series brass gun casting mated to reworked plastic cradles.



Fig. 11. After gluing the Stuart to its base, Terry added sand and pebbles alongside the tracks to give the tank the appearance of having sunk into the surface of the ground.

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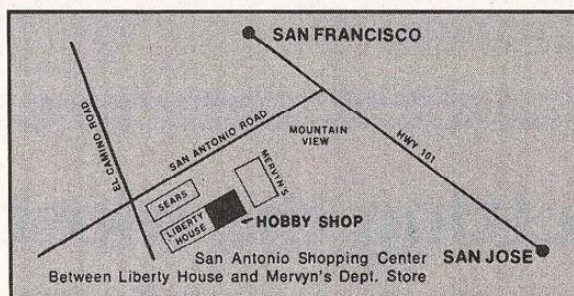
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The airbrush produces realistic camouflage schemes even in 1/72 scale. (Left to right) Testor/Italeri F-5E, Monogram A-10A, and Hasegawa F-100F conversion.

Getting the most from your airbrush

Using the most versatile (and misunderstood) modeling tool

BY PAUL BOYER

TO MANY MODELERS — including me — the airbrush is a necessity; it's the *only* way to paint models. To others it is unnecessary; an expensive, high-tech luxury and a bothersome intrusion into the enjoyable art of modeling. Perhaps the modelers who don't believe in airbrushes have never tried one or have had bad luck and relegated theirs to a box hidden away in the attic.

What is an airbrush? Since most real aircraft, cars, tanks, and ships are spray painted, it's logical to simulate a scaled-down spray-painted surface on models. The airbrush is the best tool for the job since it is a miniature spray gun, producing smooth, even coats of paint without brush marks.

An airbrush sprays paint by atomization; air rushing through the open nozzle creates a vacuum which draws paint up from the paint reservoir and mixes it with air at the tip of the nozzle. "Atomization" in this case is a figure of speech: The paint is not really

broken down to individual atoms, but into a fine mist.

Internal and external mix. There are many different airbrushes, but most employ one of two methods to mix air and paint. External-mix airbrushes, Fig. 1, are the simplest and usually the least expensive (\$25.00 to \$40.00). Compressed air is routed from the hose through the air valve and out a small hole at the front of the airbrush. The color tip, consisting of a nozzle and a needle, is set at an angle to intercept the air flow. Paint volume is controlled by turning the adjustable needle valve, increasing or decreasing the diameter of the orifice of the nozzle.

Internal-mix airbrushes, Fig. 2, are more complicated and therefore more costly (\$40.00 to \$75.00). This type uses a longitudinal needle to control paint volume. The air is channeled around the needle valve and flows nearly parallel to the paint. This system produces a narrower spray pattern than external-mix airbrushes.

Single and double action. Another way to categorize airbrushes is to de-

scribe how the air and paint volumes are controlled. The terms "single action" and "double action" are a bit misleading; the single-action airbrush has two controls: a button that activates the air valve and a needle valve that adjusts paint volume. On the single-action airbrush, however, the button controls only one thing, air.

On the other hand, both functions in the double-action airbrush are controlled with one button. As on the single-action airbrush, the air flow is started by depressing the button. This button is also linked to the longitudinal needle so that when it is rocked back, it pulls the needle back, unplugging the tip and allowing paint to flow.

External-mix airbrushes are by design single action. Most, but not all, internal-mix airbrushes are double action. For modelers, each type has advantages and disadvantages.

Single-action, external-mix airbrushes are inexpensive and easy to clean, but the minimum spray pattern diameter on most models is about 1/8". It takes both your hands to control air and paint volume simultaneously. These airbrushes handle most hobby paints including lacquers and acrylics. The parts are relatively simple and stout, and are easy to remove and replace.

Double-action, internal-mix airbrushes produce spray diameters down to 1/32", but sometimes have trouble spraying heavy lacquers and acrylics. With practice, though, the single-button control is an advantage. However, the complicated structure involves fragile springs, easily damaged threads, and expensive parts. Because of their complexity, double-action airbrushes are difficult to disassemble and clean.

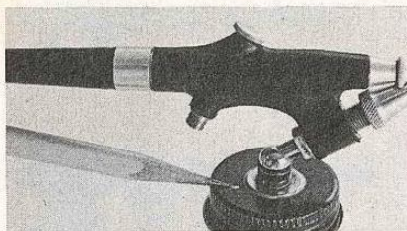
A single-action, internal-mix airbrush like the Badger 200, Fig. 3, combines the best and worst of both worlds. Since it is single action, there are fewer parts, but cleaning is more difficult than for an external-mix unit. It produces a fine spray pattern, but it requires two-handed control.

For most modeling purposes a single-action, external-mix airbrush is adequate and easiest to use and service. Airbrushes in this category include the Badger 350, Binks Wren, and Paasche model H.

Air sources. Hand in hand with the airbrush comes a source of compressed air; an airbrush just won't work without it. The simplest and least expensive (in the short run) are the disposable propellant cans sold in many hobby shops and included in some airbrush kits. The can has a simple valve and connector for the air hose, contains enough gas to airbrush one medium size model, and costs between \$4 and \$6. If you rarely use your airbrush, propel-

AIRBRUSHING PROBLEMS AND SOLUTIONS

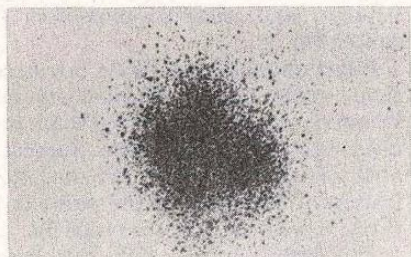
Many troubles can beset the airbrush user, ranging from warped diaphragm compressors to chunk-style paints. Here are some of the most common problems and their solutions:



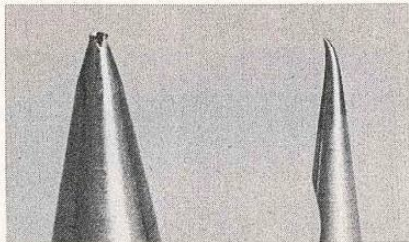
● **No paint flow.** This is the most common problem, and it can be caused by several things. Often the airbrush tip or the paint siphon tube is clogged by dried paint. To clear a plugged tip, soak a cotton swab in thinner and touch it to the tip. Before spraying the model, spray on scrap paper or into a rag; the first blast should clear out the clog. If this doesn't work, open the needle valve further and apply more thinner.

If the clog persists, it is probably in the siphon, so remove the paint bottle cap and clean the siphon tube with a pipe cleaner.

Siphon caps on paint bottles have a small breather hole to allow air to replace the paint leaving the bottle. If this hole is plugged or covered, the paint flow will be reduced and could eventually stop.



● **Spatter.** This is usually caused by insufficient air pressure or by something clogging the air nozzle in the tip. Line pressure below 10 psi will cause spattering. Turn the regulator valve up until spattering stops.



● **Spatter at an angle.** The spray pattern is even except in one area where there is spattering. This may be caused by a bent needle or a cracked nozzle. If you're careful, you can bend the needle

into shape by pressing it on a hard, flat surface. The cracked nozzle will need to be replaced. Both of these conditions may occur if the tip is dropped or if dried paint in the tip is not removed and the needle valve is forced closed. In this case, the needle pushes the hard, dried paint against the tip and it splits.

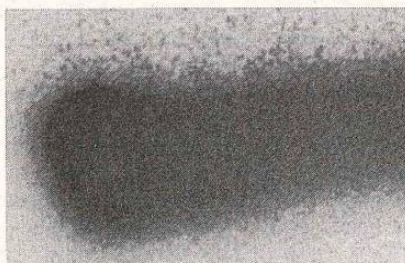


● **Gritty paint texture.** This has several causes: The paint may be too thick or improperly stirred, the line pressure is too low to atomize the paint, or the paint is drying too fast. Most hobby paints are ground extremely fine and shouldn't give you this problem if properly used. Sometimes gritty texture occurs when lacquer is applied too wet and attacks the plastic.

● **Bubbles in the paint reservoir.** Every time you press the button, bubbles form in the color bottle or cup. Something is partially blocking the orifice of the tip, channeling the air down into the reservoir. Clean the tip with a thinner-soaked cotton swab.

● **Paint leaks out the back of tip.** The connection between the paint reservoir and the back of the tip is not tight.

● **Paint leaks out the back of nozzle.** The nozzle may be completely unscrewed from the threads on the tip, allowing paint to dribble out. Most likely, the small rubber or plastic compression washer in the nozzle is shot and should be replaced.



● **Spatter at the start of a stroke.** Paint collects at the tip and is blown off when the button is pressed. Begin and end each stroke off the model.

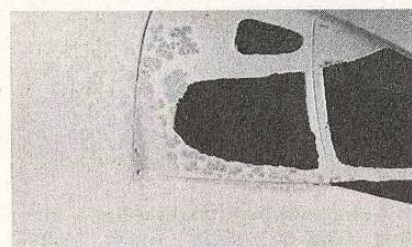


● **Spidery splashes of paint.** This is caused by spraying too close to the surface, using paint that is too thin, or applying too much paint in one spot. Be sure to keep the airbrush moving.



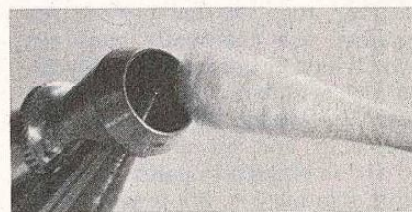
● **Uneven line.** This is caused by either dirt or dried paint in the tip or by the pulsating pressure from a compressor without a storage tank.

● **Different-colored chunks.** Suddenly, out come chunks of different-colored paint. This is dried paint inside the tip or siphon that has come loose with the fresh paint. Make sure the airbrush is cleaned thoroughly after every paint session. I clean mine after every third color if I do a lot of painting in one session.



● **Paint does not adhere.** This happens most often with acrylics, usually if they are applied too wet. Oil from your fingertips or mold release agent is repelling the water-based paint. Make sure that the model is washed with soapy water before painting.

● **Color changes.** Before you panic, remember that wet paint is sometimes a slightly different shade than dry paint. If the dry paint looks different from one end of the model to the other, the cause may be poorly mixed paint. Mixing the paint again and applying a fresh coat should cover the problem.



● **Recurring clogs.** This usually happens when a fast lacquer dries in the tip. Add a few drops of retarder to the thinned paint and stir. It can also be caused by large chunks of pigment blocking the tip. Clean the tip with a thinner-soaked cotton swab and clear the clog into a rag.

● **Lots of overspray in atmosphere.** This is caused by too much paint at too high a spraying pressure for the job. The paint particles are bouncing off the model and into the air. You want to get the paint to stick to the model, so slow down! Back off the pressure and close down the needle valve.

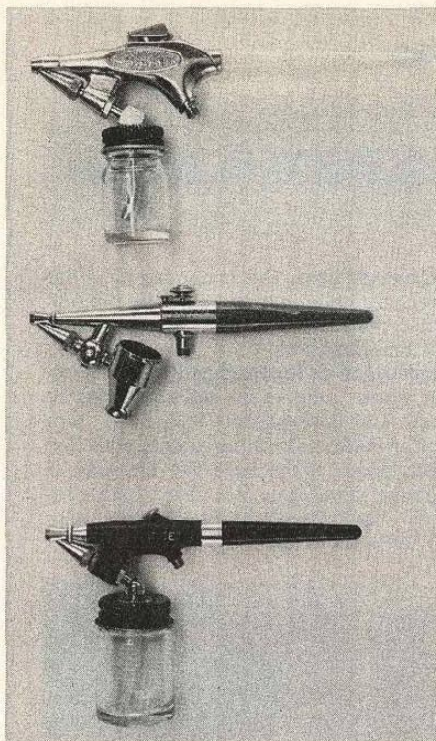


Fig. 1. Single-action, external-mix airbrushes. (Top to bottom) Binks Wren, Paasche H, Badger 350.

lant cans may be a worthwhile choice.

A cylinder of compressed carbon dioxide (CO_2) is another option, Fig. 4. Industrial-grade CO_2 is free from water and does not support combustion (that's nice to know when using flammable paints and thinners). Cylinders can be purchased or rented and you'll need a regulator as well. I spent \$150.00 for my cylinder and regulator five years ago. Gas cylinders are a noiseless source, so they're just right for apartment dwellers or late-night modelers.

However, they are not perfect; the compressed gas eventually runs out and you'll have to get it refilled. My 20-pound CO_2 cylinder (it holds 20 pounds of liquid CO_2) stands 30" high and is 8" in diameter; one fill-up costs about \$5.00 and is enough to paint about 20 medium size models. It's important to ensure that all air line couplings are leak-free and the main valve is closed when not in use so that the gas doesn't bleed out. The cylinders are heavy and cumbersome and the closest gas supply house may be miles away.

Compressors are the most popular choice for a supply of compressed gas. Small diaphragm compressors made for airbrushes usually cost under \$100.00 and last for years, Fig. 5. They are noisy, and must run as long as you are using the airbrush.

Some modelers object to the pulsating pressure of a small compressor and opt for one with a holding tank, Fig. 6. The compressor fills the tank, then

automatically shuts off. As air is used, the compressor kicks on when the pressure in the tank drops below a certain level. The result is an even, steady air flow. In addition to the noise, the compressor and holding tank combination is a bulky setup — and at \$300.00 or more, it's more expensive than a plain compressor.

Accessories. When compressed air is released it cools, causing water vapor in the air to condense in the air line. This condensation builds up into water drops that are forced out the air line, into the airbrush, and onto your fresh paint job. Although water seldom creates drastic problems in painting, it is a nuisance that is easily dealt with by adding an in-line water trap to your compressor.

Most simple compressors don't include a regulator, but you can add one to adjust the air line pressure. A combination water trap/line pressure regulator is a handy item, Fig. 7.

Most airbrushes come with a color cup and a bottle with a siphon tube. Paint filters that fit around the siphon tube in color bottles are available from airbrush dealers. Some compressor brands offer foot switches to turn the compressor on or off when your hands are full with model and airbrush.

Spare bottles that fit the siphon cap are perfect for storing premixed and thinned paint, Fig. 8. They allow quick color changes without the messy transfer of paint from one bottle to another.

Eyedroppers, available from drug stores, make it easy to measure paints and thinner volumes when mixing. A spray booth with a fan and exhaust duct dumps solvent fumes and overspray out of your workshop. A respirator is another safeguard that will prevent you from inhaling toxic fumes.

Painting with your airbrush. There are many books about airbrushes and airbrushed art, but they won't teach you how to paint models. Some airbrushing problems discussed in these art books occur in painting models — usually, improperly thinned paint or damaged airbrush parts — and we'll deal with these and other specific modeling airbrush problems on page 39.

Most airbrushes fit comfortably in the hand, much like a large pen. Your index finger usually pushes the button, though I have seen modelers who use their thumb on the button with the index finger used as a pointer. Some airbrushes like my Paasche have their buttons further back on the body; if it's more comfortable, try pressing the button with the middle of your index finger, between the first and second knuckles, instead of the fingertip. Figure 9 shows three ways to hold the airbrush.

The air hose sometimes gets in the

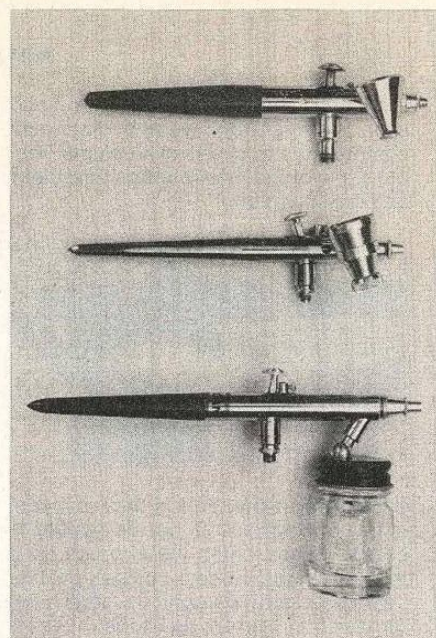


Fig. 2. Double-action, internal-mix airbrushes. (Top to bottom) Paasche V, Thayer & Chandler A, American Airbrush model KX 2000.

way, bumping into the model, brushing tiny parts onto your shag carpet, or tipping over open paint bottles. To get it out of the way, wrap the hose over your wrist and forearm, Fig. 10.

There are five variables in airbrushing that you can control: paint consistency, paint "speed," air pressure, paint volume, and airbrush-to-subject distance, Fig. 11.

Paint consistency. With few exceptions, model paints, whether enamels, lacquers, or acrylics, are too thick to be used right out of the bottle. Successful airbrushing depends on efficient atomization of the paint; if the paint is too thick, it will not atomize properly.

The best way to find the proper thinning ratio for a particular paint is to experiment, keeping track of how much paint is used with how much thinner. I like my paints to have the consistency of milk, usually cutting two parts paint with one part thinner (2:1) or using equal parts of paint and

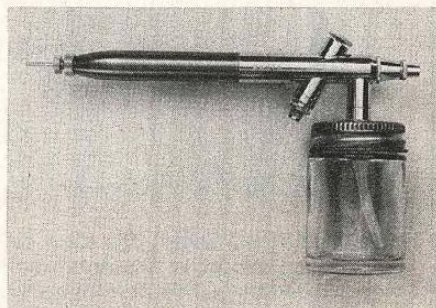


Fig. 3. The Badger 200 is a single-action, internal-mix airbrush.

thinner (1:1). Some paint manufacturers recommend certain ratios that can be used as a starting point, but it pays to experiment with your particular airbrush before blasting away on your model.

Before thinning any paint, make sure that it is completely stirred. Paints are made of carefully measured amounts of vehicle, carrier, and pigment. An insufficiently stirred bottle of paint may yield too much (or too little) of one of these elements and further thinning will only make matters worse. Straining the paint may be necessary to filter out solidified chunks of pigment that would clog the airbrush nozzle or siphon.

Mineral spirits will cut enamels such as Humbrol, Pactra, or Testor. Lacquer thinner will also cut enamels as well as lacquers. Care should be taken with any lacquer or lacquer thinner as they can destroy previous paint coats and plastic if used improperly.

Floquil paints are xylene-based lacquers and should be cut with their Dio-sol brand thinner. Lacquer thinner will cut Floquil, but it drastically reduces the shelf life of thinned paint. It reacts with the paint, produces a rubbery skin, and solidifies the pigment. Acrylics like Polly S and Tamiya have their own thinners but may also be thinned with a 1:1 mixture of water and denatured alcohol. Some of these special thinners are expensive, so I use them only to thin paint and use lacquer thinner to clean up.

Paint speed. Paint "speed" refers to the time it takes for the paint to dry. Ideally, airbrushed paint should arrive on the surface still wet, creating a slight sheen that disappears in a few seconds. Some lacquers are "fast" and dry before they reach the surface of the model, creating a gritty texture. Some even dry in the nozzle of the airbrush and cause a clog.

Thinning doesn't always make paints dry slower — a fast thinner will accelerate the drying time of a slow paint. Retarders slow the drying process in lacquers. Floquil Retarder may be used with Floquil paints and other lacquers, but a little goes a long way, so experiment first. You don't want to have a model that *never* dries.

Air and paint volumes. For most modeling applications, a line air pressure of 15 to 25 psi is sufficient. Too much pressure will cause the paint mixture to dry before reaching the surface and make it difficult to control the paint volume. Some small compressors put out between 30 and 50 psi, so you may need a regulator. Some airbrushes have a small screw that limits the depression of the air release button, thus acting as a crude regulator.

Paint volume is controlled by turn-

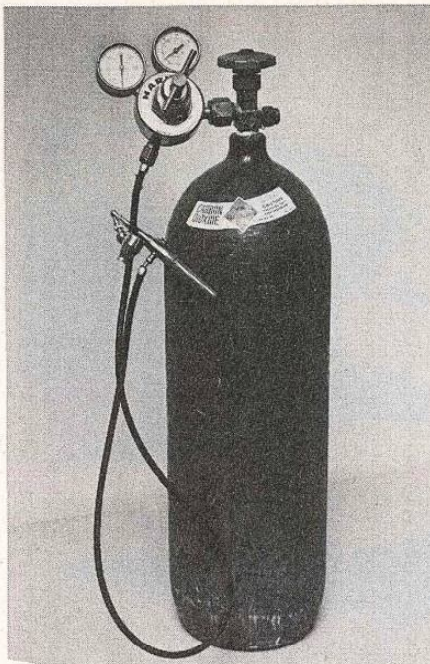


Fig. 4. A cylinder of CO₂ is noiseless but expensive. This 20-pound cylinder with regulator costs \$150.00. Cylinders can be bought or leased from gas supply houses.

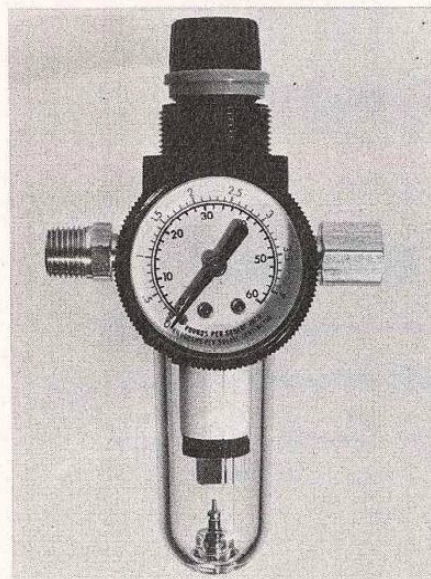


Fig. 7. A regulator and water trap are combined in this unit that can be added to most compressors.

ing the needle valve on a single-action airbrush or drawing the button back and forth on a double action. In both cases, these actions produce a larger or smaller orifice at the tip from which the paint flows; the larger the hole, the greater the volume of paint. When painting large areas, you'll want lots of paint to flow. If you want a tiny dot or squiggle, you'll want just a little paint so you can move in close to the model.

Spraying distance. The spray pattern is a cone with its point at the tip of

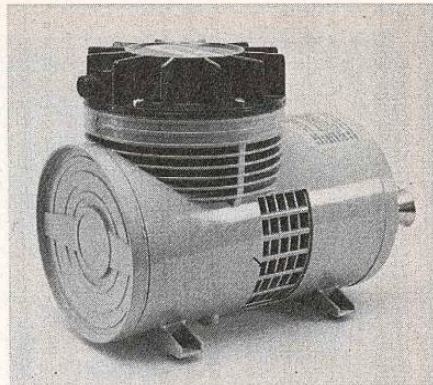


Fig. 5. Simple diaphragm compressors are the most popular source of compressed air for airbrushes.



Fig. 6. Larger compressors with storage tanks can cost \$300.00 or more.



Fig. 8. Spare bottles that fit the airbrush siphon cap allow easy color changes during a painting session.

the airbrush. As the distance between the airbrush and the model increases, the size of the spray pattern increases as well, Fig. 12.

A distance of 2" to 6" is ideal for applying an overall color. For intricate camouflage patterns, you may have to move the tip of the airbrush in to less than an inch, being careful with paint volume and air pressure. At this close range, too much of either could ruin your finish. Spray first on a scrap model or a sheet of styrene and set all your controls; when they're set properly, move to the model you're painting.



CLEANING YOUR AIRBRUSH

The key word in successful airbrushing is *clean*; if you want your airbrush to work properly every time, clean it thoroughly after every session. Most airbrushing problems stem from bad cleaning habits, so it's important to make cleaning your airbrush as routine as putting gas in your car.

The single-action, external-mix airbrush is the easiest to clean. After your painting session, blow clean lacquer thinner through the tip until it removes most of the residual paint. Next, detach the paint reservoir and put it aside. Loosen the locknut on the tip and unthread the nozzle from the tip. Use a thinner-soaked cotton swab to bathe inside and outside of both parts, followed by a slender, thinner-soaked pipe cleaner. Be careful not to force the pipe cleaner and damage the fragile nozzle.

Hold each part up to a light and look inside. The parts should be shiny and clean. If there is any stubborn buildup, soak them in lacquer thinner for a few hours and repeat the cleaning process.

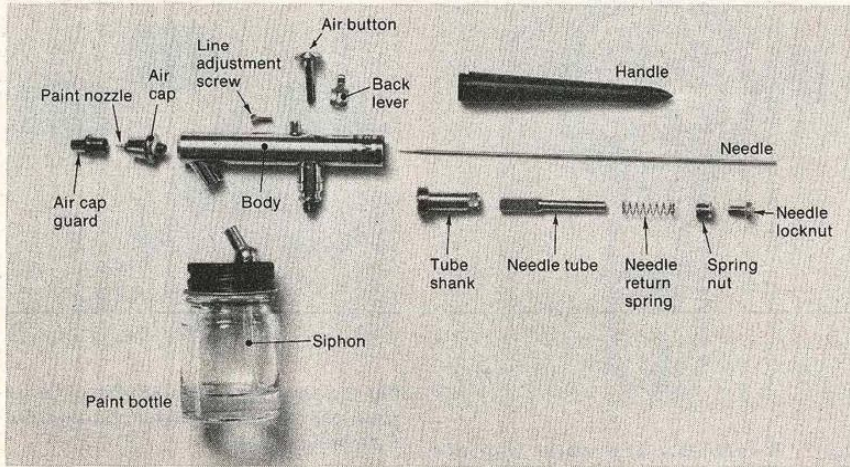
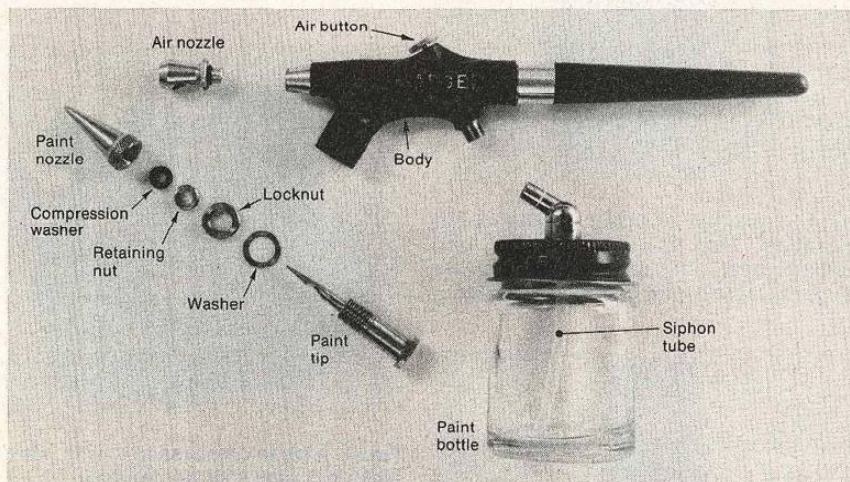
Check the air nozzle, too. Sometimes paint can splash up into the air nozzle guard and block the tiny hole. Clean this with lacquer thinner.

Clean the paint reservoir and siphon tube with lacquer thinner and cotton swabs. The pipe cleaner should fit in most siphon tubes. Don't forget the outside of the reservoir; spilled paint may get on your hands and then onto your model.

The double-action, internal-mix airbrush takes more time to clean. After flushing the brush with thinner and detaching the paint reservoir, unscrew the handle and put it aside. Next, loosen the needle locknut and *carefully* withdraw the needle. Wipe it down with a thinner-soaked cotton swab or rag and put it away where it won't be damaged — or stab you.

Next, unscrew the air cap guard and air cap and gently clean them with a wet pipe cleaner. Carefully clean the nozzle, being sure not to force the pipe cleaner. Clean out the front end of the body where the paint flows to the nozzle.

After the airbrush is clean, screw on the air cap and guard and carefully reinsert the needle, making sure it goes through the slot in the back lever. Gently press the needle into the tip, tighten the locknut, and replace the handle.



Distances as far away as 24" may be needed when weathering or dusting on a flat coat.

All these variables come into play when airbrushing. Let's say you want to paint a Vietnam-era aircraft camouflage scheme in 1/72 scale. The actual aircraft had its paint applied with a spray gun, without masking, which left soft edges between colors. The airbrush duplicates this soft edge, but we want it to be in scale with the model so we need to move the airbrush in close — the tip

less than an inch from the model! This is probably the most demanding painting you'll have to do with your airbrush.

The paint consistency must be right so that the airbrush will produce a fine line, but so the paint will cover at the same time. The air pressure must be sufficient to spray the paint: Too little will cause spatter, too much will draw paint too fast. Paint speed must be right, or the paint could dry up and clog the barely opened nozzle.

Practice, practice, practice. Even

though the airbrush makes beautiful paint jobs possible, it's unlikely that your first efforts will be satisfactory. Even the best airbrush, with all the variables carefully controlled, won't give you that wonderful camouflage the first time.

I remember my first attempt: I just bought my Paasche H kit, got some paint, hooked up the propellant can, and started my work of art. I went through two cans of propellant and ended up with a Revell 1/72 scale Hur-

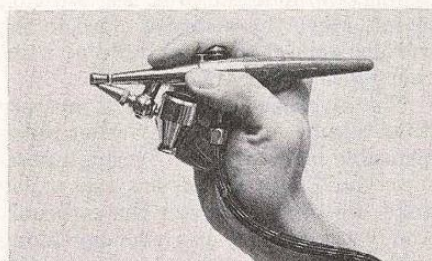


Fig. 9. How to hold the airbrush. (Top to bottom) The tip of the index finger pushes the air button; the thumb pushes the button while the index finger points; the middle of the index finger rests on the button.

ricane that looked like it was painted with concrete.

What went wrong? For starters, I hadn't thinned the paint and that created two problems: I needed lots of air to move the paint which emptied the cans in no time, and the paint was so thick that it came out gritty and obscured detail. But there was nothing to tell me how to do it right and I almost gave up. Practice (also called trial and error) is a good way to learn — and I'm still learning little tricks 16 years later.

Practice until you learn the idiosyncrasies of your airbrush and paint. Rather than spraying on paper, practice on old models that you were going to pitch out. A model is less absorbent than paper so you'll discover the proper ratios of paint and thinner to use. You can also learn to work into corners and around surface irregularities, and how small a line you are able to produce.

Airbrushing tricks. Here are a few tricks that take advantage of the airbrush's unique capabilities.

Paints don't necessarily have to cover with one coat. In fact, a few light coats give more even coverage than a single heavy one. Trying to paint a light color over a dark-colored plastic can be frus-

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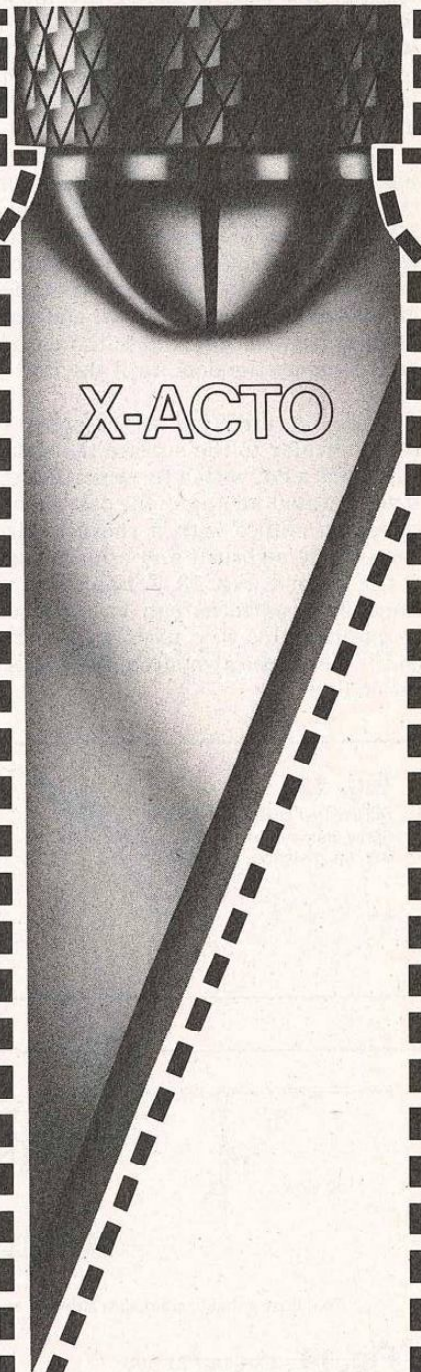
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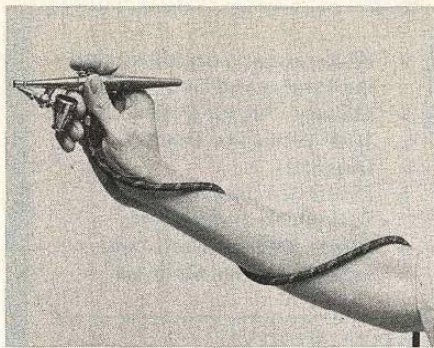


Fig. 10. Wrap the air hose around your arm to keep it out of the way.

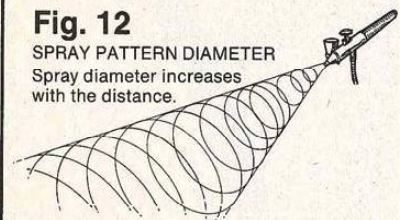
trating. It's best to spray the model with a gray primer first, then follow with the light color. When painting a multicolored model, start with the lightest color and move to successively darker colors.

Sometimes it is difficult to draw a fine line with the airbrush to represent the division between two camouflage colors. Instead of trying to execute the line in a single pass, try painting dots at points where the line curves or jogs around an obstruction. Next, add dots halfway between these dots, then gradually connect the dots until the line is filled.

When the direction of the spray is perpendicular to the surface the spray pattern is a dot with a fuzzy perimeter. If you paint at an angle, the pattern becomes an ellipse with a sharper edge nearest the airbrush and a fuzzy edge at the far end, Fig. 13. A tight edge to camouflage patterns can be produced by painting this way, aiming the fuzzy end of the ellipse away from the demarcation line.

Fig. 12

SPRAY PATTERN DIAMETER
Spray diameter increases with the distance.



VARIABLES

Paint consistency
Paint speed (drying time)
Air pressure

GUIDELINE

Consistency of milk or half-and-half
Sheen disappears in 2-5 seconds
15 to 25 psi
Covers but doesn't load up or run
1-6 inches depending on area to be covered

SYMPTOMS

Too thick - Gritty texture, obscures detail, difficult to paint
Too thin - Won't cover, runs
Too fast - Gritty texture
Too slow - Paint never dries, remains tacky
Too much - Paint dries before reaching surface, gritty
Too little - Paint spatters or doesn't spray
Too much - Paint goes on too thick, runs, obscures detail
Too little - No coverage, transparent color, dusty look
Too close - Paint runs, loads up, obscures detail
Too far - No coverage, misty, dusty look

Fig. 11 THE VARIABLES

Realistic exhaust stains can be made by starting with the airbrush over the exhaust nozzle. Instead of moving along the surface behind the nozzle, simply turn the direction of spray away from the surface, Fig. 14. This concentrates the exhaust stain at the nozzle and diffuses it further away.

Airbrush weathering should be done with dilute coats of paints "dusted" on the model. The effects of sun and rain on painted surfaces vary, but in general they lighten and dull the surface. A light coat of diluted base color with a little white or light gray added will

produce a convincing weathered look. Work slowly since a little goes a long way.

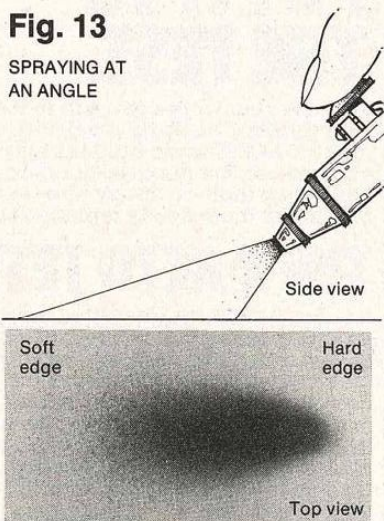
Mud splashes can be produced by using minimum air pressure and thin paint. Move the airbrush close to the surface and let the mud build up until you get the effect you want.

The airbrush is no more a mystery than a knife, a file, or any other indispensable modeling tool. Through practice, you'll gain confidence, and if you take the time to master the airbrush, you'll wonder how you ever got along without it!

FSM

Fig. 13

SPRAYING AT AN ANGLE



Meet Paul Boyer

Associate Editor Paul Boyer started modeling back in the bronze age of plastic kits, the mid-fifties. "I had a pact with my father; he built them and I crashed them," Paul says. "But pretty soon I was crashing faster than he could build, so I started making my own. Since then I must have built hundreds of planes, cars, ships, and armor models."

Paul has been an active member of IPMS since 1970, serving as newsletter editor and president of the Lawrence, Massachusetts, and Denver, Colorado, chapters. He was editor of the IPMS/U. S. A. *Update* before joining the *FineScale Modeler* staff in December 1982.

Paul is single but still finds time to do some modeling at home. He is a bicyclist, naturalist, vocal impressionist, and a movie, music, and trivia buff.

Top view

To diffuse exhaust stain, turn airbrush away from surface.

Fig. 14 EXHAUST STAINS

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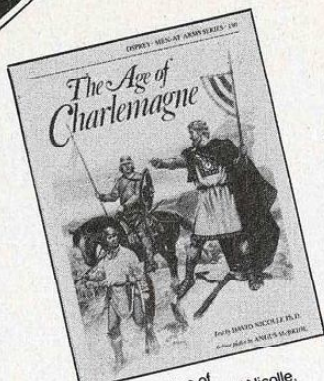
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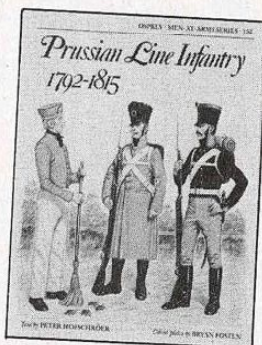
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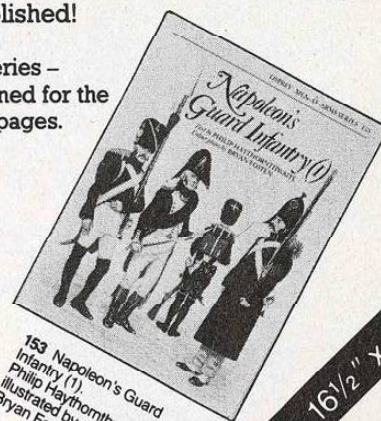
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The tractor of the *Duel* truck has a narrowed grille and hood assembly made by chopping and recombining parts from an AMT/Ertl kit. The circular object on top of the hood is a mirror used by the driver to see if there's enough clearance for the trailer to pass under viaducts or bridges.



Color photos by Shep Paine

Modeling the truck from the movie *Duel*

A 1/25 scale conversion and scratchbuilding project inspired by a TV melodrama



(Above) Fig. 1. The air and electrical lines on the model were made from telephone wire, and the spring that supports some of them was made by wrapping thin copper wire around a rod. Note the drain cock on air tank, how the air conditioning lines run under the cab, and the painted-out logo on the door.

FOR YEARS, ever since the first time I saw it, I've been fascinated by the 1971 made-for-TV movie *Duel*. Steven Spielberg (who wasn't famous then, but is now) directed the thriller, which starred Dennis Weaver as a tormented motorist pursued by an infuriated trucker in a dark and menacing tank truck. I decided that building a model of this vehicle would not only be interesting, but would afford me the opportunity to use a variety of modeling skills, including conversion, extensive scratchbuilding, and, of course, weathering.

The movie was produced by Universal Television, but I was unable to obtain much in the way of reference material through Universal. As luck would have it, I met a person who worked for ABC Television in Chicago, and through him obtained a handful of color prints that I referred to while building the model. I found out later that there were two, perhaps three, trucks used in the filming, and that at least one of them was later used in some episodes of "The Incredible Hulk."

Building the tractor. My starting point for the model was the AMT 1/25 scale Peterbilt 359 Conventional (now offered by Ertl), and I started by assembling the frame, adding a 3/4"-long sheet plastic spacer just ahead of the rear axles to lengthen it. The next steps were to cut off the molded-on air-ride suspension and to replace it with a scratchbuilt leaf spring and walking beam type suspension. There isn't room here for an explanation of the different types of truck suspensions, but fortunately there are plenty of the real thing around for you to look at. You can get a wealth of information just by looking and asking questions of the people who own trucks or work on them.

The front axle was next to go under the knife. I cut the steering knuckles apart, drilled them out, and inserted brass rod so that they would operate. This alteration enabled me to animate the front axle when I arranged the model on its permanent base. Incidentally, all the suspension components on the model are functional.

The wheels on the model were pirated from AMT 1/25 scale fire truck kits (several of them!), which happened to have the right type of rim for this vehicle. The tires are from MPC truck kits, but before I mounted them on the wheels I made an adapter for my Dremel motor tool so that I could mount the wheels on it and turn them down, removing the molding seam and a few thousand "miles" worth of tread. Doing this requires a speed control for the motor tool; without the control the

tool spins so fast that plastic or vinyl will melt when you try to work on it.

Final touches to the frame and axle assembly were to add air lines, drain cocks, and other small details, Fig. 1. I used commonplace small-gauge insulated wire, the kind used for telephones, with the insulation stripped off. The finishing touch on the wheels was the valve stems — an easy thing to forget, but all pneumatic tires have them, Fig. 2.

Cab and hood changes. My only modifications to the kit cab were to clean up molding seam lines and add the air conditioner to the rear wall, Fig. 3. This consists of a sheet styrene box detailed with louvers from an old AMT 3-in-1 auto kit. Lines from the air conditioner unit run down the back of the cab and disappear underneath the cab floor. Small details came from everywhere: The clearance lights on the top of the cab are from the MPC Mack truck kit, and the horn came from an AMT Kenworth.

The interior of the cab was completely detailed, with door and window handles, auxiliary trailer brake, and so forth. After painting the instruments black and picking out the detail with white and silver, I added clear lenses with a drop of 5-minute epoxy.

The hood and fender modifications were important in changing the appearance of the tractor, but they were not difficult. The front of the hood must be narrowed, increasing the front-to-rear taper dramatically. Starting with the Peterbilt grille, I removed a 1/4"-wide vertical section from the center, Fig. 4, carefully preserving the molded-in Peterbilt emblem. Next I cut away the screen-like molded grille texture, leaving two half grille shells, then glued the halves together, filling and sanding the seam to a smooth finish.

I made an RTV mold of the Peterbilt emblem on the scrap center section of the grille, then cast a duplicate in 5-minute epoxy. After finishing the grille shell with Silver Rub 'n Buff, I attached the emblem with Hot Stuff.



Fig. 2. Jim used AMT fire truck wheels and MPC tires on the tractor. He turned the tires in a motor tool to remove some of the tread, added valve stems (arrow), and brought out the detail by dry-brushing.

The kit hood assembly came in for similar surgery. I started by removing the side panels, Fig. 4, discarding them. After sanding away the detail molded into the top portion of the hood, I scribed a line down the center, then made a mark 1/4" on either side of the center line at the front of the hood. From these marks I drew lines to the center line at the rear of the hood, forming a triangle which I removed.

The next step was to glue the altered hood halves together. After the joints on the assembly had dried, I cut off the peaked area at the rear of the hood and added a corresponding fillet to the front. Then I smoothed the hood parts, making sure that the mating surfaces where the hood would abut the cab and the radiator shell were flat. I temporarily attached the cab to the frame and test fitted the hood and grille shell. When I was satisfied with the fit, I made new hood side panels from .010" styrene.

Fender and exhaust system modifications. The inner lip of each fender must be widened to match the narrowed, tapered hood. I added a triangular wedge of .020" styrene to the inside portion of the fenders, Fig. 5. You'll have to determine the exact size and shape of the part by trial and error,



While the tractor is an extensively modified kit, the trailer is almost entirely scratchbuilt. The hinges on the trailer doors are stretched sprue, divided into sections with a modeling knife for a piano hinge effect. Even if you're not interested in modeling this particular truck, Jim's weathering techniques should be of interest to you.

1/50 SCALE

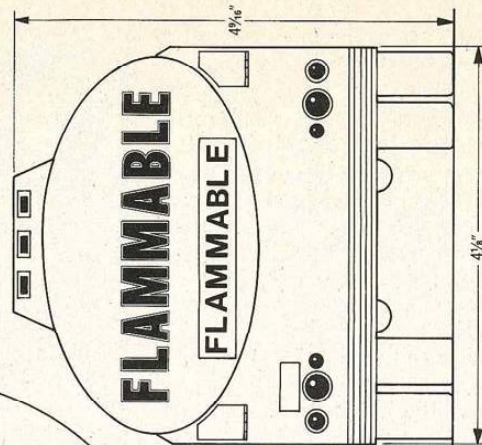
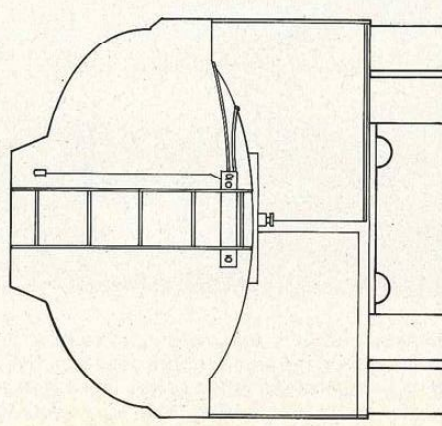
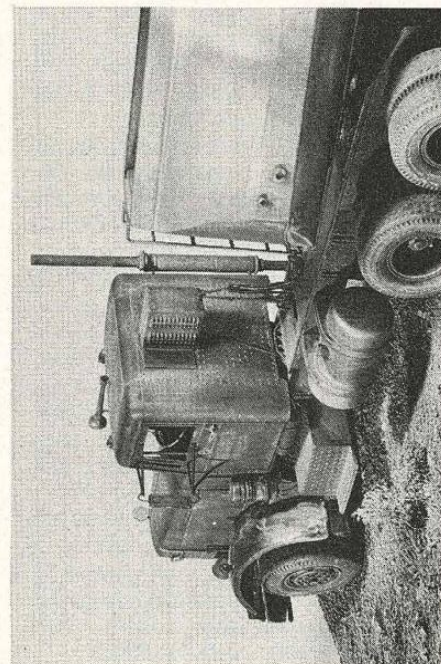
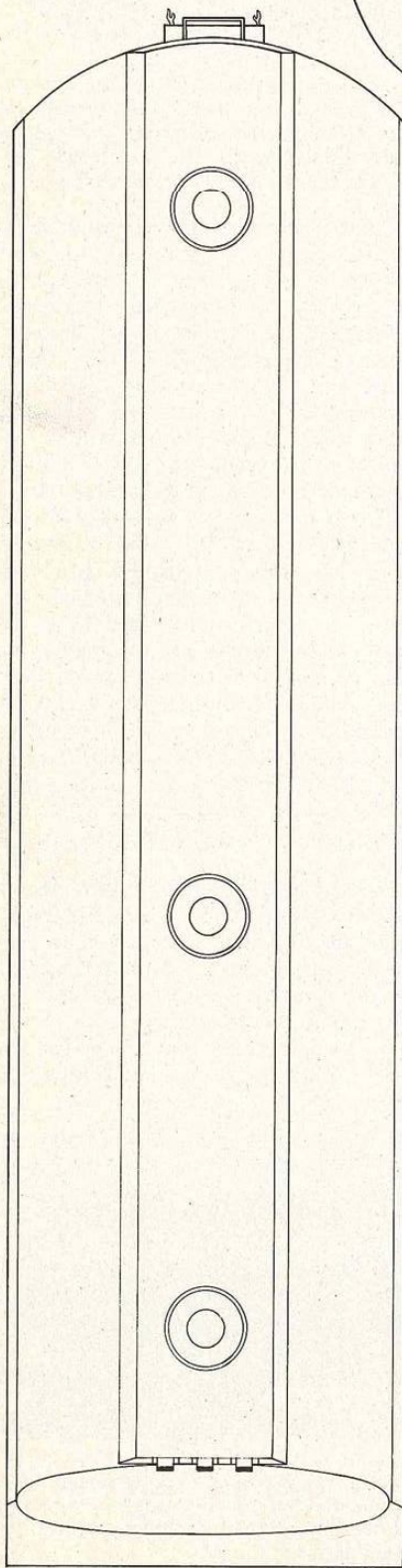
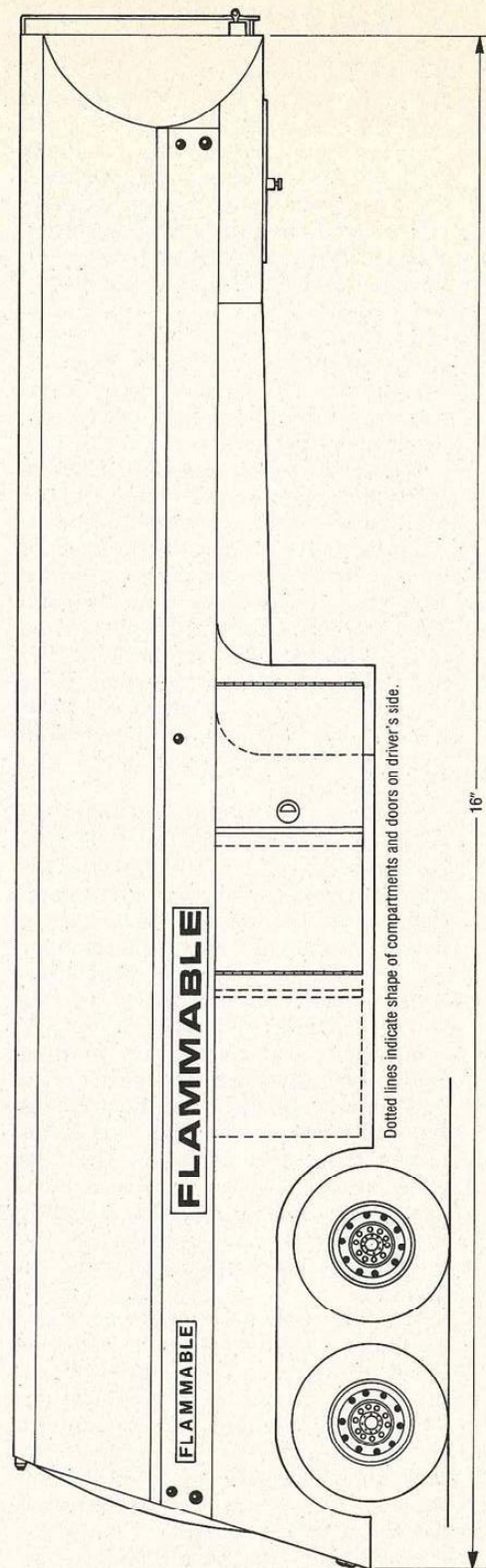
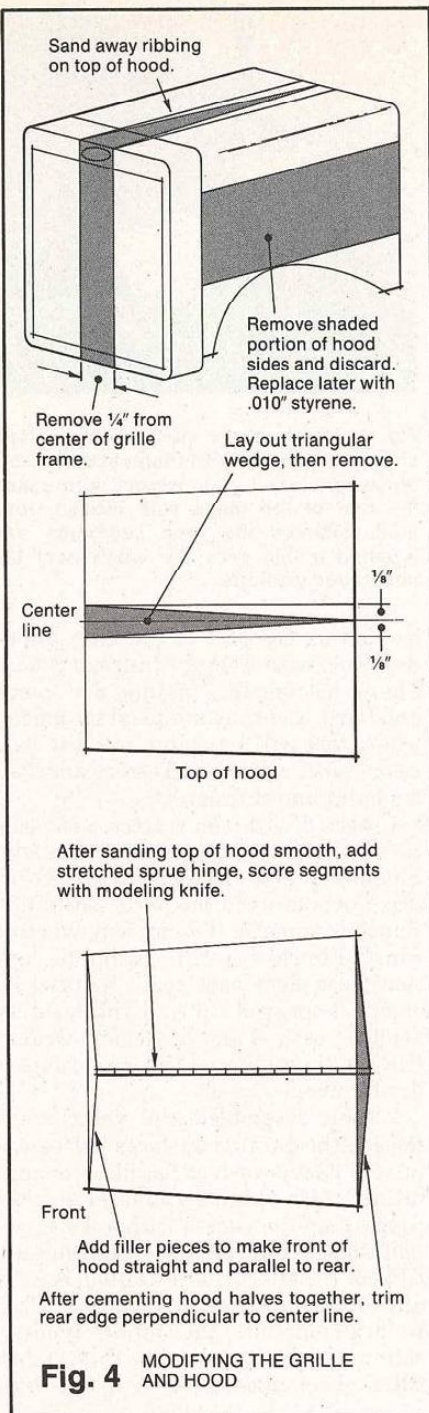


Fig. 3 The boxlike air conditioner on the rear of the cab is scratchbuilt, as is the simple exhaust system.

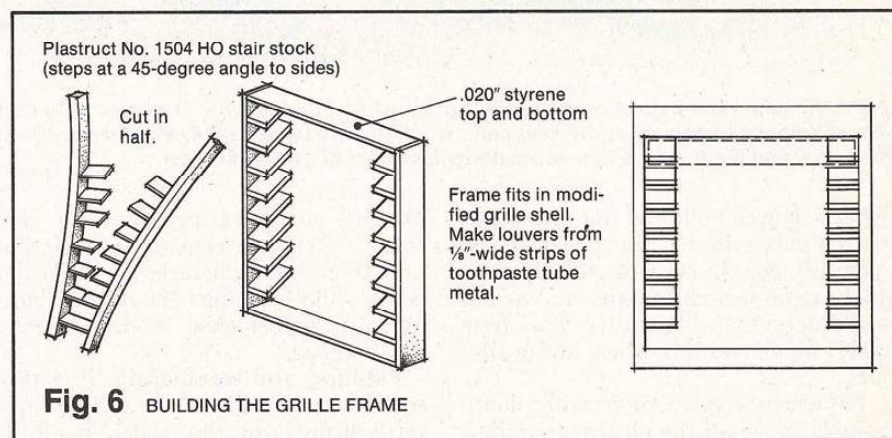
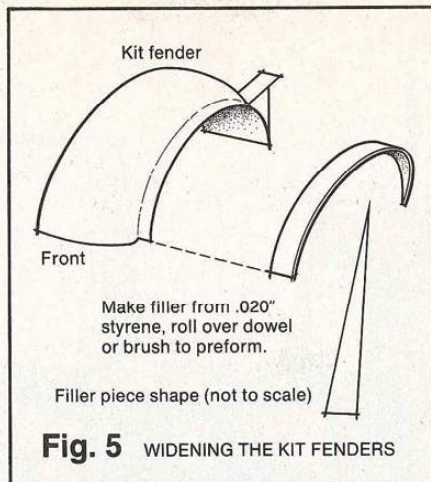




then roll the part around a dowel or brush handle to pre-curve it before cementing it to the fender.

Figure 6 shows how to make the frame and louvers that fit inside the modified grille shell. The louvers themselves are 1/8"-wide strips of toothpaste tube metal. I used metal instead of thin plastic because I've found that plastic this thin, without bracing, tends to warp, but metal doesn't. The trick in building the frame for the louvers is to employ a section of Plastruct HO scale stairs, cut in half as shown in the figure, to make the sides.

The exhaust system was fashioned



from Plastruct tubing and aluminum tubing. I wanted to simulate the heavy, dry rust usually found on such piping, so I finished the parts using a special technique. I sprayed the parts with Humbrol Track Colour (HS215) enamel, and while it was still wet, I dipped them in a container of flour, completely covering the paint.

When the paint dried I blew off the excess flour and airbrushed the parts again with Track Colour. After this had dried, I lightly oversprayed random areas with Floquil SP Daylite Orange (RR134), then completed the coloring with Burnt Sienna, Burnt Umber, and black pastel chalk powder. The result is a convincing dry rust look.

Additional details to complete the tractor include headlights from an MPC 1/25 scale 1928 Cadillac and several license plates made from toothpaste tube metal. After applying decals from several truck kits, I bent and shaped the soft metal to give the individual plates a worn and battered look.

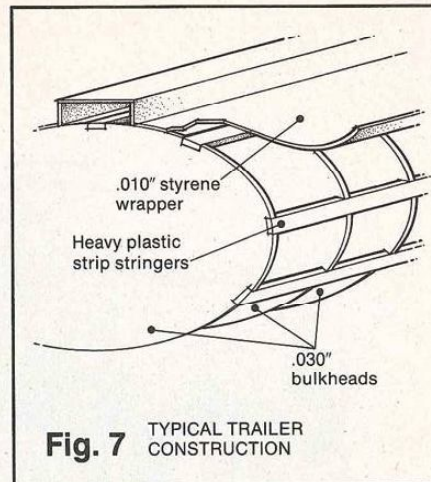
The mirrors came from an MPC Mack truck kit, and before mounting them I removed the word "Mack" from the back surfaces. The mirror brackets were fashioned from brass wire, which I prefer to piano wire because it's a lot easier to bend, and it can be flat-

tened with smooth-jaw pliers or in a hobby vise.

Scratchbuilding a tank trailer. The trailer is almost entirely scratchbuilt, and since I had no information other than the frames from the movie, my first step was to draw up a set of plans, which are reproduced, half size, on page 48. Judging from the photos, I assumed that the trailer was 35' long. I was unable to identify the manufacturer of the trailer, and finally decided it wasn't important, anyway.

The trailer was built from Evergreen sheet styrene — lots of it. The bulkheads and flat areas of the sides are .030" sheet, and all curved portions are .010". All the curved areas were constructed with a series of bulkheads and stringers, Fig. 7, which helps the curved pieces hold their shape better. One important tip in constructing the trailer is to use super glue, not liquid plastic cement, to fasten all the panels to the bulkheads and stringers. Used in the amounts required for something as big as the trailer, liquid cement tends to weaken and distort thin plastic sheet.

The rear suspension and axles came from an IMC flatbed trailer kit, and the wheels and tires are from the Ertl International Harvester Transtar. To open up the lightening holes molded on the



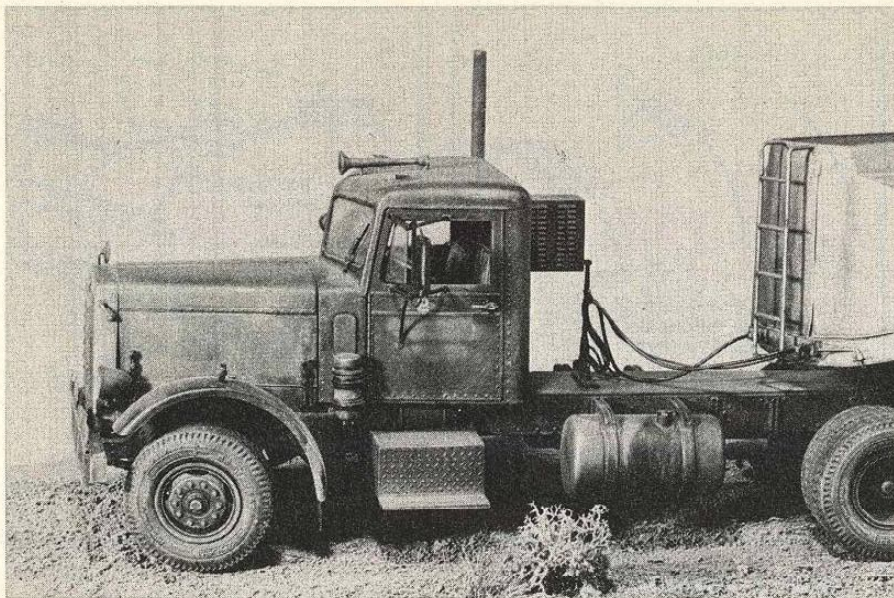


Fig. 8. An important aspect of the movie truck was its grubbiness — it was so dirty that Jim still doesn't know what the real color was! The model is heavily weathered on all surfaces, and the tractor has a particularly thick coat of grime and dust.

wheels I first hollowed out the backs with a cutter in a Dremel Tool. I also modified the hubs and added valve stems as on the tractor wheels. Various small details on the trailer came from AMT, MPC, and IMC truck and trailer kits.

Tankers are great subjects for detail hounds, since all the electrical and air lines have to be mounted on the outside. These lines on the model are various sizes of brass rod and wire. The brake lines and electrical connections between the tractor and the trailer are telephone wire, this time with the insulation left on.

The air line connections from tractor to trailer are equipped with lost wax brass O scale (1/48) model railroad fittings called "glad hands." These are ideal for 1/25 scale truck air line connectors, and they have the added ad-

vantage of operating like the real thing — you can connect and disconnect them. Manufactured by Precision Scale*, these fittings should be available at well-stocked model railroad hobby shops.

Painting and weathering. Probably the most enjoyable aspect of this project was finishing the model. The full-size truck in the TV movie was incredibly dirty, and trying to capture that battered, grubby look without making the weathering look overdone was quite a challenge.

The color of the real truck looked different in each photo — yellow in some, brown in others, and something in between in others. I decided to compromise and painted the cab orange. This,

*Precision Scale Co., 1120-A Gum Avenue, Woodland, CA 95695 (O scale part No. 4680).

Fig. 10. Note that the broad dark streaks on the trailer correspond with the loading hatches on top. The signless signpost next to the truck was fabricated from sheet styrene, then drilled through with dozens of holes to represent stamped metal.

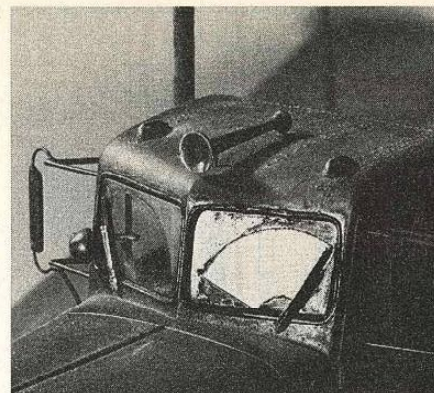
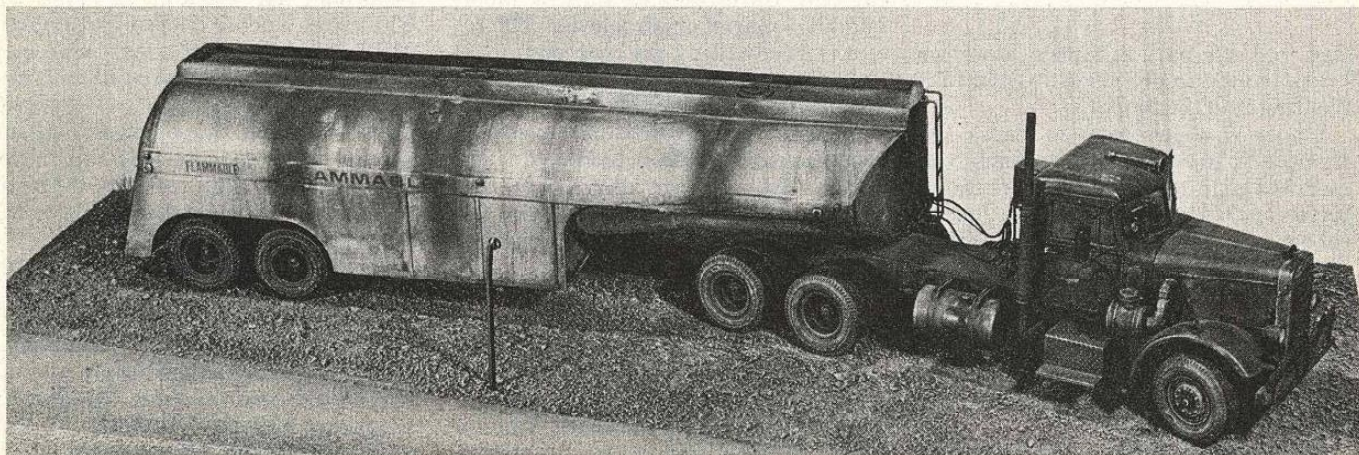


Fig. 9. Jim carefully masked the wedge-shaped areas of the windshield that would be swept clean by the wipers, airbrushed the rest of the glass with Floquil Dust, then removed the tape segments and brushed a thin gray dirt wash over the unsprayed portions.

as well as the rest of the base colors, was done with Floquil Railroad Colors. These lacquer-like paints dry tough and hard, and they are ideal for models where you will be going over the base colors with washes of Testors and Pactra paint and thinner.

I started with the tractor, airbrushing the frame, wheels, and fenders with Floquil Engine Black (RR10). When dry, I oversprayed the parts with Final Finish semimatte (I'm not sure whether Final Finish is still available; any semigloss clear coat could be used instead). I sprayed the cab and hood assembly with Floquil Reefer Orange (RR30), then allowed the base colors to dry for about a week.

I then assembled the vehicle and flooded the painted surfaces with a relatively heavy wash of flat black enamel diluted with thinner (mineral spirits), sopping up the excess with a wide, soft paintbrush. I did this several times until I got the effect that I wanted. A word of caution in using this method: Used in large amounts, the thinner tends to soften plastic, especially thin, fabricated sheet plastic parts. If this hap-

pens, don't panic, just allow the surface to dry thoroughly and the plastic should not be permanently damaged.

When the washes had dried, I had to go over portions of the model and "re-touch" them. Where the wash was too heavy I used a clean brush and clear thinner to scrub the area until the right amount of the base color showed through. I used the same technique to blend heavily soiled areas into the less-dirty portions of the surface.

After I was satisfied with the look of the black wash treatment, I lightly airbrushed the model with Floquil Dust (RR6), applying the paint in thin, random vertical streaks. It's important to use the Dust sparingly, because you really can't see how much paint is there until it dries, and it's easy to overdo the effect. The look I was trying to achieve is that of dust streaks left by years of dirt, redistributed by rain water running down the sides of the vehicle, Fig. 8.

The final touches were added with pastel chalks, plus small amounts of dry-brushing using Imrie/Risley Buff. The dirty windshield, Fig. 9, was done by first masking the wedge-shaped area swept by the wipers, then spraying the windshield with Floquil Dust. Before it dried completely, I "washed" the area with vertical strokes of a clean brush dipped in Pactra or Testors enamel thinner. I allowed this to dry, removed the tape, then went over the area that had been masked with a very thin wash of gray.

The trailer was painted and weathered in the same manner as the tractor. The base color was Floquil Old Silver (RR100), and the washes I used were not as heavy as the one applied to the tractor. Before weathering the trailer I applied the lettering, a combination of kit decals and individual Letraset dry-transfer characters.

Modeling grease and oil. After completing the weathering treatment on the trailer, I looked at it critically and decided that the chassis of the vehicle needed further attention. This part of the real thing always has a heavy accumulation of grease and oil, and although modelers have used a variety of techniques to simulate this, I'm willing to bet that mine is one you haven't tried!

I start by making a container from heavy-duty aluminum foil, put some Vaseline in it, then hold the container over a candle flame until the Vaseline melts. Mix in either black pastel chalk powder or powdered graphite, then apply the resulting goop to the front axle, steering knuckles, tie rods, oil pan, rear axle, and other chassis parts. Before you start, take the time to go out and look at a few examples of real trucks so you can study how the grease



Meet Jim Stephens

Jim Stephens is 39 years old and lives in Chicago, Illinois. A 16-year veteran of the Chicago Police Department, he's married and has two daughters, who he reports "with my wife, Mary, support my hobby 100 percent." Jim has been modeling for about 12 years, and though he's built ships, planes, tanks, and trucks, he says "vehicles are probably my favorite." He prefers building from scratch, and roughly 90 percent of his models are scratchbuilt.

Jim's models have won awards in IPMS regional and national contests, as well as two gold medals, a best of show, and the coveted Chicago Medal at the Military Modelers of Illinois Annual Show. He told FSM, "I consider myself fortunate, and this success can only be attributed to my local IPMS chapter and all the fine modelers that belong to it. Without participating in this very beneficial organization it would have been almost impossible to develop my modeling skills. I feel that this type of program and organization is a must not only for the beginner, but the accomplished modeler as well."

Jim's other interests include flying, and he's a member of the Experimental Aircraft Association, Warbirds Chapter. Ironically, Jim reports that "although I find it hard to model an airplane, I enjoy the real thing."

and grime are distributed on the undercarriage. (By the way, I use Vaseline instead of oil or margarine because Vaseline won't evaporate; oil or margarine eventually will.)

I mounted the truck on a base made from 3/4" particle board, Fig. 10. The road surface is spackle, spread on very thin to simulate pavement. When the spackle dried I sprayed the road with Floquil Reefer Gray (RR12), then applied a flat black wash to it. When the wash dried I oversprayed the pavement surface with speckles of Floquil Engine Black (RR10) to simulate asphalt. The dirt surface at the side of the road is sifted dirt, oversprayed with browns and tans, and I added a border of walnut veneer to give the base a finished look.

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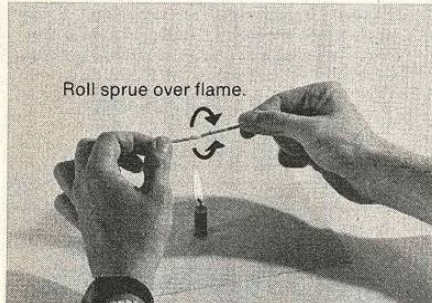
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Conducted by Paul Boyer

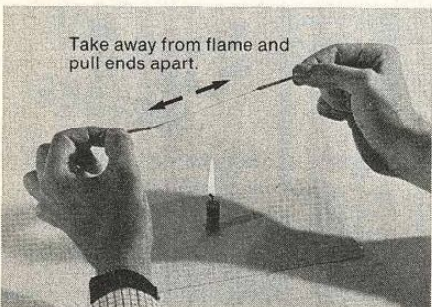
Stretched sprue. I've read a lot about the use of stretched sprue for rigging and antenna wires, but have no idea how it is made. How about a quick course?

Mark Pfohl

Stretching sprue is sometimes considered an advanced technique, but it is quite simple. Every injection-molded kit has the parts attached to runners or sprues; this is the stock material you need.



First, light a candle in a safe place (button up all your flammables) and cut a section of straight sprue 4" to 6" long. Place the center of the section of sprue about an inch over the candle flame and roll the sprue between your fingers so that the flame heats all sides evenly. Continue heating the sprue until it turns glossy and soft, take it away from the flame, and pull the ends apart. The quicker you pull, the thinner the diameter the stretched sprue will be.



Pulling slowly produces thick sections that can be used for boarding ladders and other structural items. A quick, steady pull can give you nearly three feet of thin, constant-diameter stock ideal for antenna and rigging wires. If you pull too fast, the sprue will break.

Some styrene stretches better than others, so experiment with different brands. Clear sprue can give the best results if you're looking for ultra-thin stock. Be careful not to ignite the sprue; styrene fumes aren't good for you — and you'll get little black ashes floating all over the room.

Stretched sprue can be attached with white glue, super glue, or epoxy. I don't recommend using liquid or tube plastic cements since they dissolve the thin, fragile plastic.

Paul Boyer

Realistic water. I want to build a diorama involving a man immersed in water up to his arms. The water would be transparent blue-green, so that the man's body would be visible under water. If I use polyester casting resin for the water, will the resin spoil the paint on the figure?

F. Charles Swift

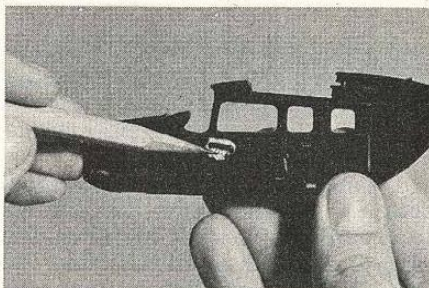
Polyester resin is a volatile chemical with solvent properties. It can ruin some painted surfaces, yet has no effect on others.

The surest way to proceed is to experiment with painted scraps of plastic and metal beforehand, so that when you begin working on your final version you'll know what to expect. Try different kinds of paint, and be sure to let them set for several days before immersing them in the resin. I think you'll find that most paints will resist the resin after they have completely dried and set.

Another characteristic of polyester resin that can cause problems with painted surfaces is the heat generated as it cures, which can be considerable, depending on the volume of resin involved. You can control the heat by pouring the resin in successive layers, and allowing each layer to cure and cool before pouring the next. Keep the layers thin (about 1/4"), and you should have no problems. Again, experiment first, just to be sure.

Here are two more tips on using polyester resin. First, the fumes are highly toxic, so work in a well-ventilated area, preferably your garage. Second, you may find that the final layer remains slightly tacky to the touch, even after it has had plenty of time to cure. Going over the surface slowly with a hair dryer should solve this problem. Just be sure that the hot air doesn't melt your figure!

Shep Paine



Frosty bond. I've been using Plasti-Zap C++ to glue my models together and many of my joints get a frost-like deposit over the adhesive. Is my bottle defective? What is happening to the glue?

Larry Miller

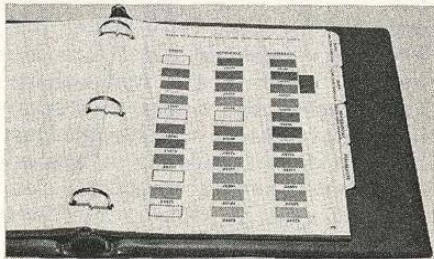
Ideally, cyanoacrylate glues dry clear, but as with any chemical reaction, there are many variables that can play hob with the results.

I've had the same experience with several different brands of super glues. I talked with a technical representative from Pacer Technologies and he explained the problem. The forming of the white deposit is called "chlorosis" and is caused by the deposit of cured polymer as the cyanoacrylate vapors react with water vapor, the catalyst. In addition, some low grade polystyrenes enhance this problem with impurities. Another cause is excess glue which of course results in excess chlorosis, and excess humidity in the atmosphere also plays a part.

By ventilating your work area, you can reduce and perhaps eliminate the problem. Use a small fan to blow directly across your workbench. Since the frost is a deposit, light sanding or polishing with rubbing compound or Pacer's Z-7 Debonder can eliminate it.

I don't recommend using cyanoacrylate to attach clear canopies. Frosting can really be a problem when it appears on the inside of a canopy that has just been cemented onto a model (no ventilation in there). You can't polish the inside without tearing off the canopy. I've learned my lesson and attach all clear canopies with white glue.

P. B.



Federal Standard 595a. I would appreciate information on the color chips described in many FSM articles, the Federal Standard 595a. Where do I get them and how much do they cost?

Robert Harrison

I called Washington and the current source is the General Services Administration, 7th and D Streets SW, Room No. 6039, Washington, DC 20407. They distribute the document which includes over 400 1/2" x 1" paint chips grouped by colors (blues, greens, grays) and mounted on heavy pages punched for loose-leaf binders. The price is \$5.50 including postage. Larger (3" x 5") paint chips for each color are also available for \$15 each. Make checks payable to the General Services Administration.

P. B.

U. S. Marine green. Could you tell me who makes a paint that matches Federal Standard color FS 34097, used to paint U. S. Marine helicopters?

Steven J. Tully

The color you're looking for is called Field Green, and is produced by Testor in its Model Master line. Floquil also makes the color (No. M198), as does CompuColor (CAC 25), available from Rosemont Hobby Shop, P. O. Box 139, Trexler Mall, Trexlertown, PA 18087. Field Green fades rapidly and turns yellow-green. U. S. Marine aircraft see a lot of action and don't often get fully repainted, so some aircraft appear to have a patchwork paint job of fresh paint over weathered paint when panels are replaced or unit markings obliterated.

P. B.

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Dropped flaps, raised spoilers, opened speed brakes, radome, and refueling probe are all visible in this view of Geoff's model. Note remove-before-flight streamers hanging from the weapon pylons, intake covers, and landing gear retraction struts. On the real aircraft, these are attached to pins that prevent the units from being operated.

Superdetailing Hasegawa's 1/72 scale F-14A Tomcat

A parked and opened model of the Navy's prime fighter

BY GEOFFREY PEARCE

GRUMMAN'S F-14A TOMCAT has now seen a dozen years of service as the U. S. Navy's fleet defense interceptor, a role that it was specifically designed for. Since its first fight on December 21, 1970, no other fighter aircraft in the world has been capable of doing what the F-14 can. It has Mach 2 speed, operates from aircraft carriers, and its powerful Hughes AWG-9 radar/AIM-54 Phoenix missile weapons system can independently track and destroy six separate targets as far as 100 miles away. On August 19, 1981, two F-14s from VF-41 shot down two Libyan Su-22 Fitters after being fired upon over the Gulf of Sidra.

Although the techniques used in this project aren't difficult, they do require

a good deal of time to complete. Anyone who can cut and glue plastic will be able to handle the modifications — just take your time and work at it until you get it right. The techniques used are applicable to other scales; I've done the same things to the 1/32 scale Tamiya kit with good results.

Minicraft-Hasegawa's 1/72 scale kit (No. 1134) offers the modeler the most accurate representation of the aircraft in this scale, but it still has shortcomings. In general, the scale outline and molding are good.

Flaps and spoilers. I decided to drop the flaps and raise the spoilers on the model, Fig. 1. Using the kit panel lines as a guide, I cut the leading edge slats and trailing edge flaps from the upper and lower wing halves. With the flaps missing there was little bonding sur-

face left so I reinforced the wing assembly with strips of .020" sheet styrene inserted where the slats and flaps had been cut away.

To accurately simulate indentations left by the raised spoilers I resurfaced the wing with cutouts for the spoiler seats. First, I traced the shape of the upper wing half (minus flaps and slats) onto a piece of .010" sheet styrene. Next, I measured the spoiler area on the kit wing and transferred the dimensions onto the tracing. I cut the new wing surface out of the sheet and removed the entire spoiler area from that. The cutouts were used later to make the spoilers.

I started to apply the new wing surface by aligning it with the leading edge and gluing it down. I used Micro Weld on my model because it dries



Both photos, Geoffrey Pearce collection

(Above) This Tomcat from VF-101 *Grim Reapers* is a late production version with the pitot tube installed in the point of the radome. Note later paint scheme of overall Light Gull Gray. (Right) The "front office" of a real F-14A. Sophisticated electronics allow much simpler instrument panels than those found in aircraft designed in the fifties.



quickly and holds firmly. I waited till this bond was thoroughly set before gluing the remainder of the surface. When set, I bent the new surface down over the kit wing and slowly glued it down. When using this method, be careful not to apply too much glue as it will soften the plastic and cause severe distortion. If you do put too much glue on and a sink mark develops, don't try to fix it right away; the plastic underneath will stay soft for quite some time and any attempt to repair it will only make it worse. To be safe, let it dry until you're ready to start puttying. I continued gluing the new surface back and attached it at the trailing edge. Once this had dried, I folded the wing tips down and glued them into place.

The leading edge slat seat was made from .010" sheet styrene. I suggest cutting it oversized then sanding it to fit. Next, I closed the ends of the slat seat with oversized pieces of styrene and sanded them to fit.

I built up the trailing edge of the new surface by gluing a .010" x .040" strip flush with the new surface and overhanging the flap hinge line. To support this piece, I added another .010" x .040" strip directly underneath, cutting it in sections to clear the flap rails.

Guided by the kit wing detail, I added .010" x .040" sections in between the spoiler hinges and then longitudinally between each spoiler. These small strips coincide with the trailing edge flap hinge rails. When the assembly had dried thoroughly, I sanded it down with wet 400-grit sandpaper to remove any high spots.

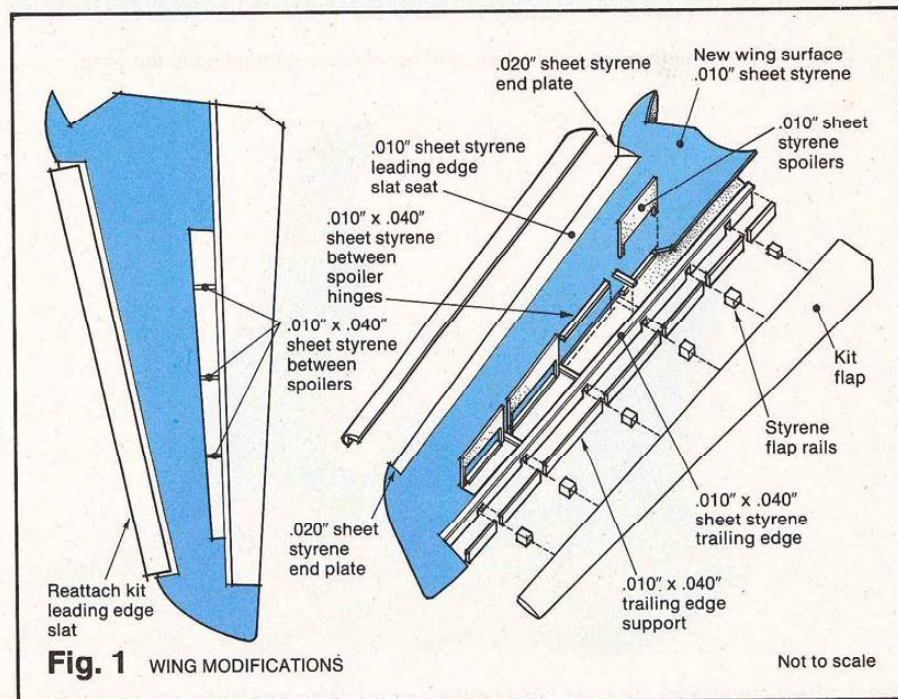
Since swinging wings would damage the flaps and spoilers, I permanently fastened each wing into the fuselage in the swept-forward position. Next, I

sanded the leading edge of the flaps and cut grooves for the flap rails with a file. I left off the rails until all painting and decaling was completed, Fig. 2. End caps were added to the leading edge slats and the inside of the back edges were sanded thin for a more realistic appearance.

The openings in the fuselage that accept the trailing edges of the wings when they are swept back should be closed with sheet styrene before the fuselage is assembled. Figure 3 shows the completed wings.

Engine air inlet covers. Hasegawa molded the engine air inlet tunnels as separate pieces, making it easier to

build the inlet FOD covers (Foreign Object and Debris). I traced the inside of the inlet by holding a piece of .020" styrene over the opening and running a sharp pencil around the inside of the opening. The covers were cut just outside of the lines and sanded to fit. I did each cover separately since they weren't exactly the same. The cover stiffeners and handles were made from strips of



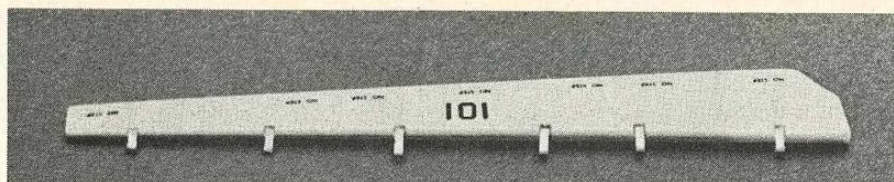


Fig. 2. A completed trailing edge flap with styrene rails attached. Because of the fragile rails, each flap was painted and decaled before it was placed on the wing.

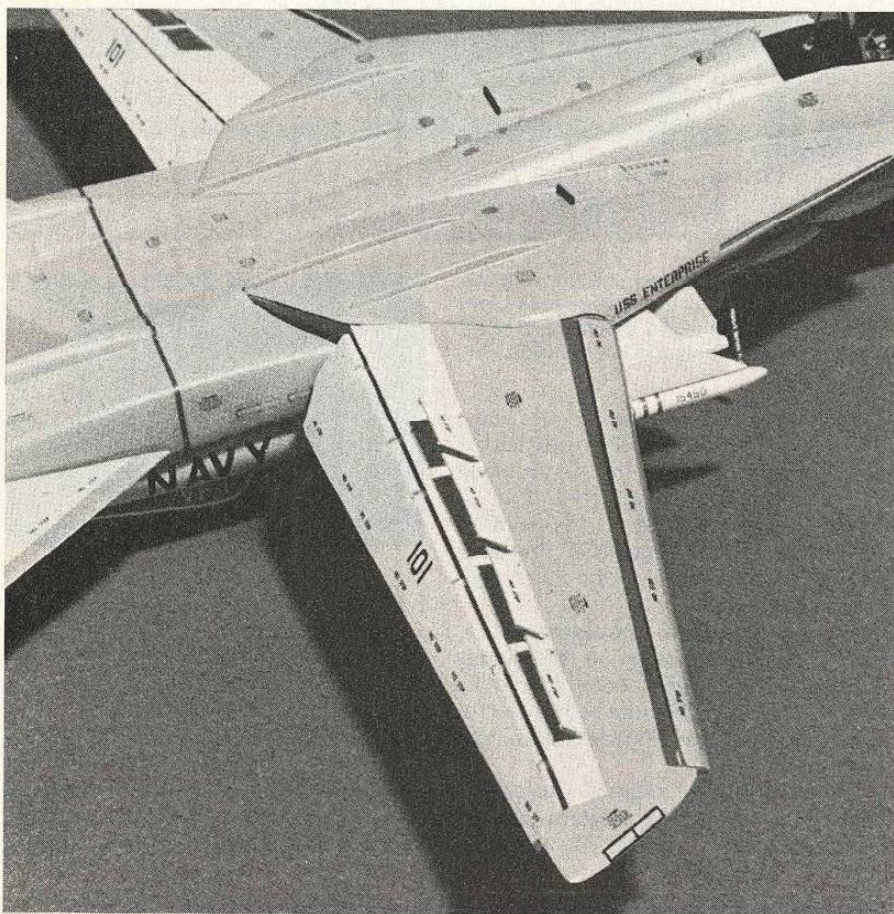


Fig. 3. The view shows how the flaps, slats, and spoilers were attached to the wing.

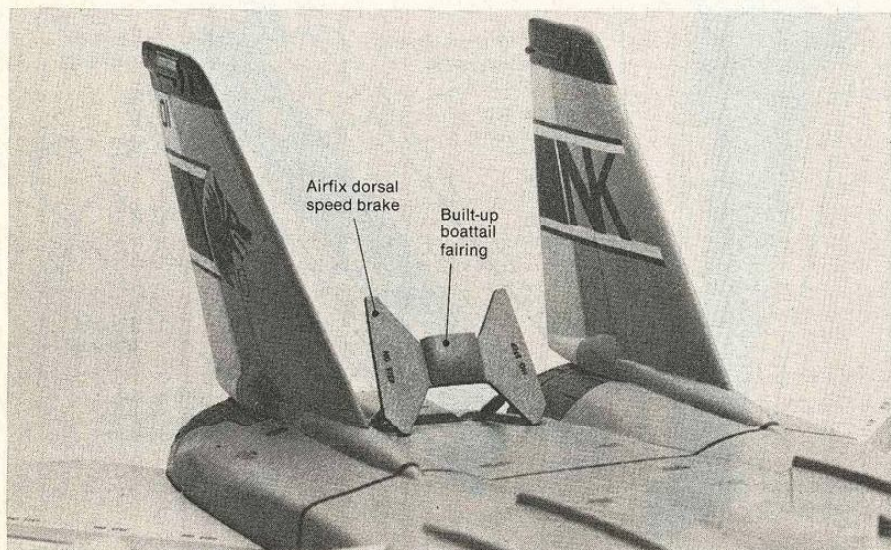


Fig. 5. Sheet styrene was used to build up the boattail fairing on Airfix's speed brake.

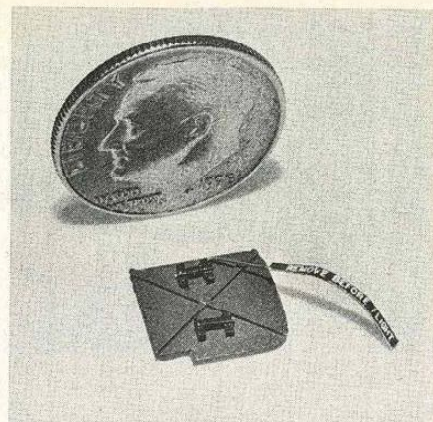


Fig. 4. The tiny intake FOD covers were made from sheet styrene. The streamer is a Microscale decal applied to paper.

.020" x .020" styrene, Fig. 4. After the covers were made, the intakes were attached to the fuselage.

Speed brakes. The speed brakes on the Hasegawa kit are molded into the fuselage, but the Airfix kit (No. 50060) has separate moldings for dorsal and ventral brakes. The dorsal brake on the Hasegawa kit is located 1 mm too far back, so I used Airfix's dorsal brake as a template to rescribe the proper location. Then I cut out the brake and puttied over the original scribing. I laminated sheet styrene to build up the boattail fairing absent from the Airfix brake, Fig. 5.

The ventral brake openings were lined up with the dorsal brake openings at their leading edges, then the cavities for both dorsal and ventral brakes were backed with .010" styrene. Either the Airfix ventral brakes or new ones from .020" styrene can be used. Both dorsal and ventral brakes open at the same time.

Refueling probe. The refueling probe compartment was cut out of the fuselage side and inside walls were made from .010" styrene. I used the Airfix probe but any suitable replacement will do. The probe door was made from .010" styrene and set aside for installation later, Fig. 6.

Crew boarding ladder and steps. I cut out the two steps and the boarding ladder hatch from the front left fuselage half. The ladder hatch was replaced by a curved piece of .010" styrene while the ladder was built from strips of .020" x .020" styrene. The two folding steps at the top of the ladder and their supports are .010" styrene. The width of the ladder was matched to fit the opening in the fuselage.

I made the two folding steps on the fuselage side from .030" styrene, Fig. 7, and backed all the cutouts in the fuselage with boxes of .010" styrene, making sure they cleared the cockpit interior.

Cockpit interior. The Hasegawa kit

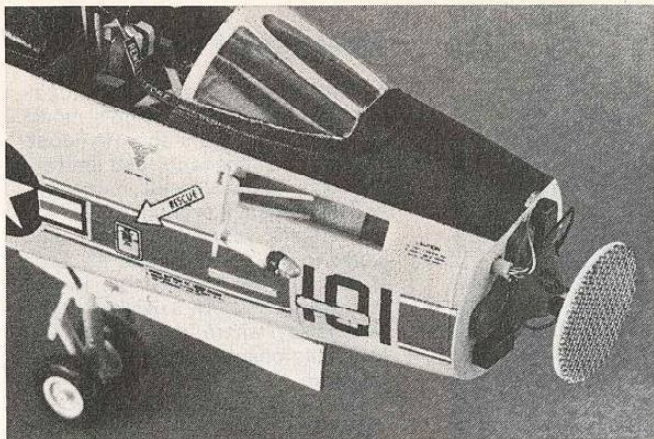


Fig. 6. Airfix's refueling probe was added to the Hasegawa kit and the probe bay was made from sheet styrene.

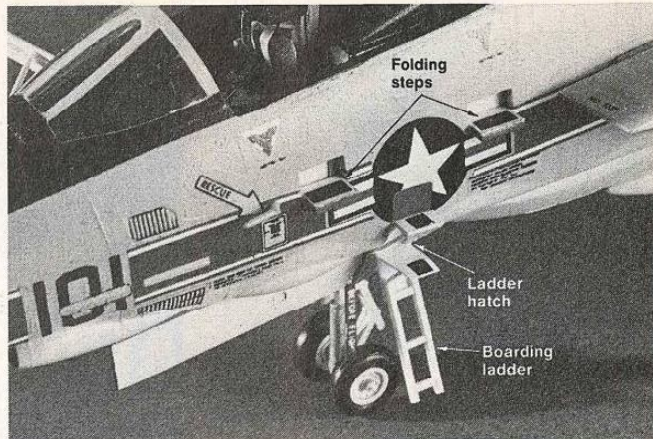


Fig. 7. Boarding ladder, ladder hatch, and steps were made from various thicknesses of sheet styrene.

interior is basic; floor with attached consoles, instrument panels, and two seats are included. Pilot's stick and center panel, Radar Intercept Officer's (RIO) center pedestal, deck behind the RIO's seat, and bulkhead behind the pilot's seat are missing.

I added vertical walls between the two crew compartments, a bulkhead behind the pilot's seat, and another behind the RIO's seat. This assembly was painted with Floquil paints mixed and matched to FS 36231, Dark Gull Gray.

Many of the references listed on page 58 have detailed photos and diagrams of the instrument panels and consoles and I referred to them as I scratchbuilt the interior. I made both instrument panels from .010" styrene and added the missing lower center section to the pilot's panel. The display screens on both panels were made by spraying pieces of .005" clear styrene with transparent green, and mounting them behind cutouts in the instrument panels.

I cut out instruments from an IPMS/U. S. A. 1/72 scale instrument panel decal, leaving them on the paper for added relief. Each instrument was glued on the panel with white glue. The canopy jettison handle and other small knobs were fashioned from stretched sprue. The throttle quadrant was made from sheet styrene and the handles and grips were made from stretched sprue.

The RIO's center pedestal with the radar control handle was built up and added next. Again, handles and knobs were added from stretched sprue.

For the side consoles I placed console decals on a gray-painted strip of .010" styrene, cut these into small sections, and attached them to the kit consoles. They were dressed up using touches of red, green, yellow, and white to represent knobs and lights.

Ejection seats. I kept the head restraints of the original seats and built up the remainder of both seats from scratch. Each seat consists of 36 pieces.



Fig. 8. Geoff's model features an improved cockpit, with scratchbuilt Martin Baker GRU7A ejection seats and greatly enhanced instrument panels and consoles.

I used fine insulated wire to simulate the oxygen hose and added seat belts made of white bond paper with Waldron* harness buckles. Before inserting the seats into the cockpit, remove-before-flight streamers from Micro-scale decal sheet No. 72-117 or 72-123 were placed on paper and attached with fine wire, Fig. 8.

After the cockpit assembly had been inserted into the fuselage and the forward fuselage halves joined, the deck behind the RIO's seat was added to close off the aft cockpit area.

The inside canopy frames are black and rather than trying to mask the frames from the inside, I masked the outside and painted it black. I followed that with a gray primer and then Light Gull Gray. The completed canopy frames look black on the inside and gray on the outside.

Radar assembly. Fortunately, the radome was molded as a separate piece,

*Waldron Model Products, 1358 Stephen Way, San Jose, CA 95129.

Fig. 9, so no cutting was required. The forward fuselage halves also include the bulkhead which mounts the radar so only a small seam had to be sanded. I removed the radar mount from the bulkhead of Monogram's 1/72 scale F-15 and fitted it to the Hasegawa bulkhead. The antenna pivot and dish were made of sheet styrene, with a

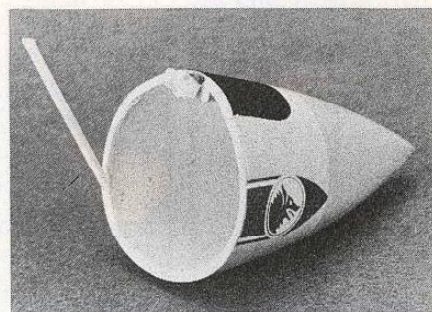


Fig. 9. Hasegawa's kit features a separate radome. The "hinge" and support rod are made from sheet styrene.

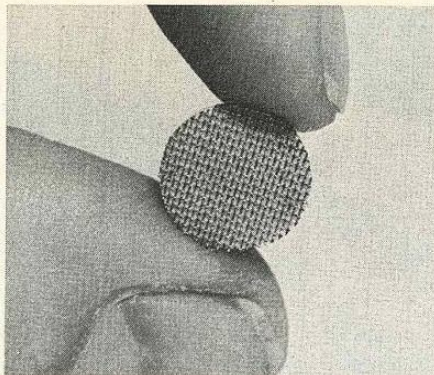


Fig. 10. Fine brass screen was added to a styrene radar antenna dish.

small piece of fine pipe screen attached to the front of the dish, Fig. 10. The electrical cables were made from stretched sprue and fine wire and the entire assembly was left off until the model was finished, Fig. 11.

Paint and decals. I used Nitro Stan* body putty for filling. After the model was assembled, I washed it with soap and water and allowed it to dry before painting. Du Pont Platinum Gray Lacquer No. 30-S was used to prime the model, after which the model was inspected, re-puttied, and re-primed. Be careful when using lacquers; always wear some kind of mask and ventilate your work area. The vapors can cause blinding headaches and other unpleasant side effects.

After letting the model dry for a day, I sprayed on a coat of Du Pont white lacquer No. 5040L, allowed it to dry, and smoothed it out with wet 400-grit sandpaper. I repeated this process until

*Standard Coating Corp., Ridgefield, NJ 07657.

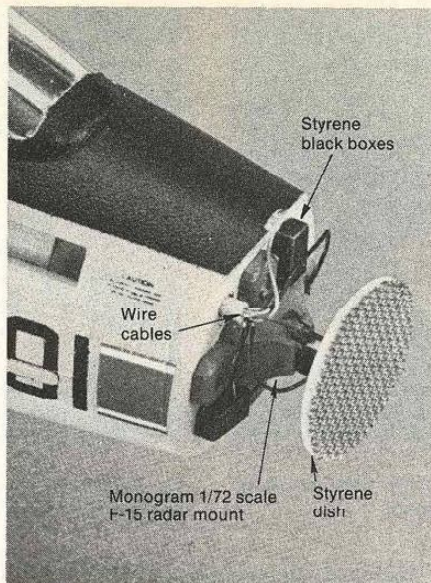


Fig. 11. The completed radar assembly includes the antenna mount from Monogram's 1/72 scale F-15 Eagle. Note wires and additional black boxes.

the surface was smooth. The Light Gull Gray (FS 36440) was mixed from white, black, and a touch of yellow lacquer. The gray was again sprayed, sanded, and sprayed for a smooth surface. I used Floquil Signal Red (RR65) for the trim on the fin and rudder.

I glossed the model with several coats of Du Pont Clear Lacquer, sanding between coats. The last coat was not sanded. I used Microscale decal sheet No. 72-119, modifying it to represent the VF-1 trim under its second commanding officer. Only minor modifications to the decals and anti-glare panels were necessary to create this scheme. The decals were applied using

Meet Geoff Pearce

Geoff became interested in modeling after admiring a friend's model collection nine years ago. He adopted a motto of "patience and time are the keys to successful modeling" and has kept at it ever since.

Geoff is 35 years old, married, and works in inertial guidance research for Singer's Kearfott Division. He is a member of IPMS/U. S. A. and IPMS/New Jersey, where he served as editor of the chapter's newsletter, *The Intercom*.

The author wishes to thank Bill, "Schoney," and Lois at Grumman Aerospace for their assistance in this project.

the Micro system with a slight twist. I only used the Micro Sol under and over the decal. Due to the number and complexity of the decals, I applied them to one side of the model at a time, allowing 24 hours between sides.

Next, the excess decal adhesive and water spots were washed off and a coat of Floquil Hi-Gloss was applied to seal the decals and help feather the decal edges into the finish. When dry, the entire model was given a light overspray of clear lacquer to kill the high gloss and add a protective coat.

Final assembly. All the fragile pieces went on after the paint and decals. The spoilers were made from the leftover .010" styrene used to resurface the wings, painted white on top, Signal Red on bottom, and attached to their respective locations on the wings. The radar, boarding ladder, speed brakes, canopy, refueling probe, and intake covers were carefully added to the model. I added brake lines to the main gear and more remove-before-flight streamers to the landing gear safety locks, missiles, and intake covers. Real streamers are made from either heavy canvas or vinyl; canvas streamers can fold and crinkle, while vinyl streamers resist folding. I try to keep mine hanging straight down.

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- Drendel, Lou, *F-14 Tomcat in Action*, Squadron/Signal Publications, Carrollton, Texas, 1977.
- *Grumman F-14 Tomcat*, Koku Fan Specials No. 83 and 89, Bunrin-Do Publications, Tokyo, Japan.
- Kinzey, Bert, *F-14 Tomcat in Detail & Scale*, Detail & Scale Publications, El Paso, Texas, 1979.
- Stevenson, James Perry, *F-14 Tomcat*, Aero Publishers, Inc., Fallbrook, California, 1975.



This view shows the extensive work done to the Hasegawa wings. The dropped flaps, slats, and raised spoilers add detail not found in Tomcat kits.

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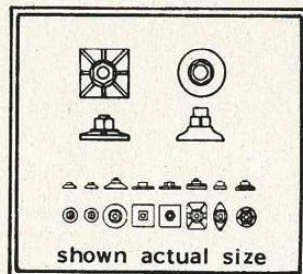


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BY BURR ANGLE



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The author includes a brief account of each incident and there are also sections describing German courier flights over Sweden in the early years of the war (some of these flights were made in a captured DC-3).

The book is published by Monogram Aviation Publications, 625 Edgebrook Drive, Boylston, MA 01505; the price is \$24.95.

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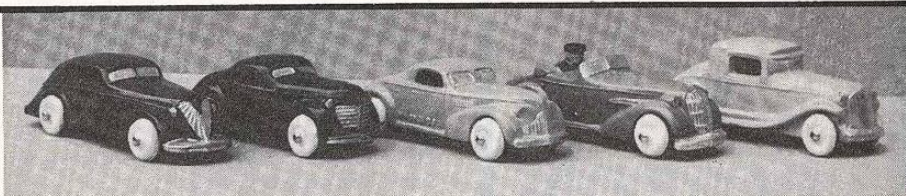
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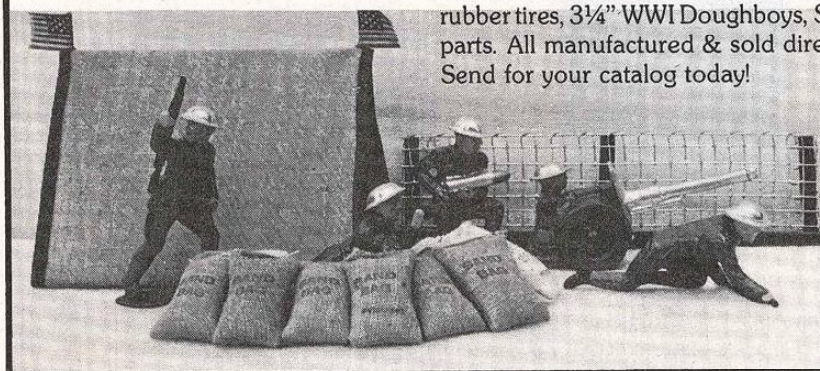
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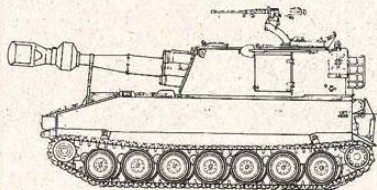
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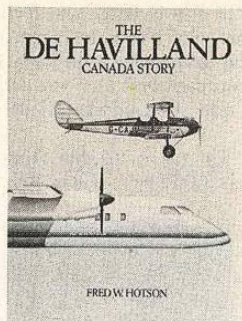
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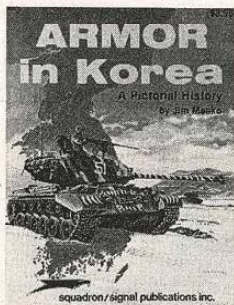
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This handsomely designed book is published by Canav Books, 51 Balsam Avenue, Toronto, ON, Canada M4E 3B6; the price is Can\$29.95, which includes postage.



Encyclopedia of German Tanks of World War Two

First published in England in 1978 by Lionel Leventhal Limited and now distributed in the U.S. by Arco Publishing Company, Inc., 219 Park Avenue South, New York, NY 10003, this 272-page, 8 3/4" x 11 1/4", hard-cover book by Peter Chamberlain and Hilary L. Doyle contains 1,037 black-and-white photos and descriptions of all German battle tanks, armored cars, self-propelled guns, and half-tracks from 1933 through 1945. Appendices provide information about such topics as tank armament, ammunition, radios, and optical equipment, and there is an index. The price is \$14.95.

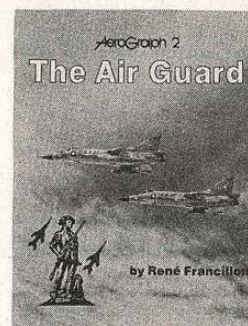


Armor in Korea

This 80-page, 8 1/2" x 11", soft-cover book by Jim Mesko is a pictorial history of tanks

and other armored vehicles used in Korea between the summer of 1950 and the summer of 1953. Most of the 187 black-and-white photos and 32 color renderings by Don Greer show American or other equipment of the United Nations' forces, often in action against North Korean or Chinese soldiers. The photos are arranged chronologically and are accompanied by text which briefly explains operations by armored vehicles throughout the war.

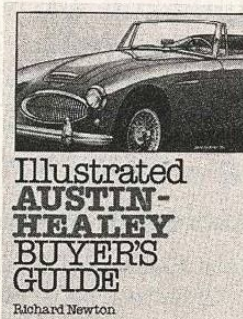
The book is published by Squadron/Signal Publications, Inc., 1115 Crowley Drive, Carrollton, TX 75011-5010; the price is \$8.95.



The Air Guard

United States National Guard units have operated aircraft since before World War One, and the Air Guard is now the world's fifth largest air force. René Francillon's 180-page, soft-cover, 8 1/2" x 11" book on the Air Guard contains 490 black-and-white photos, 17 drawings of aircraft, and 16 tables. The text provides a brief history of the Air National Guard, capsule histories of nearly 100 Air National Guard squadrons, and descriptions of aircraft flown by the Guard since 1946.

The book is published by Aerofax, Inc., and is distributed by Motorbooks International, P. O. Box 2, 729 Prospect Avenue, Osceola, WI 54020; the price is \$24.95.



Illustrated Austin-Healey Buyer's Guide

Austin-Healeys were among the most popular British-made sports cars in the U.S. during the 1950s and 1960s. Richard Newton's 7 1/2" x 9 1/2", 152-page, soft-cover book on Austin-Healeys is aimed primarily at restorers and collectors of full-size autos, but is also useful to modelers because many of the 136 black-and-white photos show interiors, instrument panels, wheels, headlights, grilles, and engine parts. The text discusses each model from the BN1 through the final Jensen-Healey and includes lists of parts suppliers and enthusiasts' clubs.

The book is published by Motorbooks International; the price is \$13.95.

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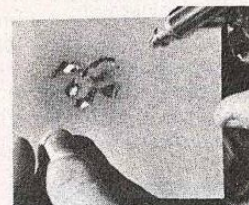
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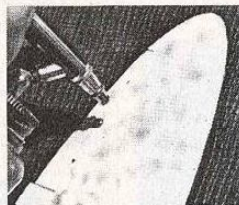
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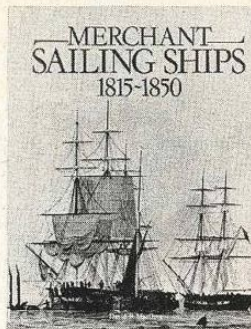
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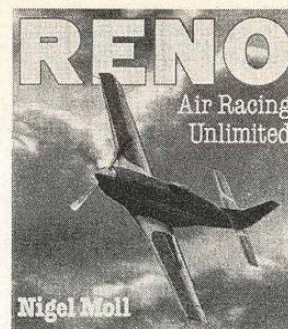
Merchant Sailing Ships, 1815 - 1850
David R. MacGregor's latest book is a hard-cover, 192-page, 8½" x 11" volume that

contains 110 black-and-white photos and 100 line drawings, including many hull and sail plans. The text describes nearly all types of wooden and iron merchant sailing ships from 1815 through 1850 and concentrates on the most common types of ships in British service — clippers and other fast ships are excluded because the author has discussed these in earlier books. There is some coverage of U. S. and Canadian vessels.

The book is published in the U. S. and Canada by Naval Institute Press, Annapolis, MD 21402; the price is \$21.95.

Reno, Air Racing Unlimited

In this 128-page, soft-cover, 8¼" x 9" book Nigel Moll tells the story of the 1982 Reno, Nevada, air races by means of 120 color



Nigel Moll

photos (many a full 9" x 16½"). The text is limited to paragraph-length captions which accompany most photos.

The pictures show competing aircraft ranging in size from tiny Formula I racers through immaculately restored WWII fighters. The planes are shown in the air and on the ground; many photos show mechanics preparing aircraft and there are excellent shots of aircraft details. The book's aim is to re-create the fun and excitement of the races: It succeeds admirably.

Published by Osprey Publishing Limited, the book is sold in the U. S. by Motorbooks International; the price is \$11.95.

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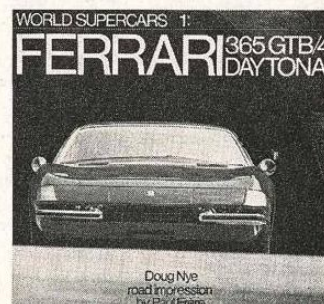
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Doug Nye's 88-page, 10" x 10¼", hard-cover book has 95 photos (65 in color) and 6 color scale drawings. Most of the color photos occupy a full page and show details on a carefully preserved 365GTB/4. The text describes the car's design and production history and includes a report by Paul Frère on the car's handling characteristics.

The book is published by Arco Publishing, Inc.; the price is \$16.95.

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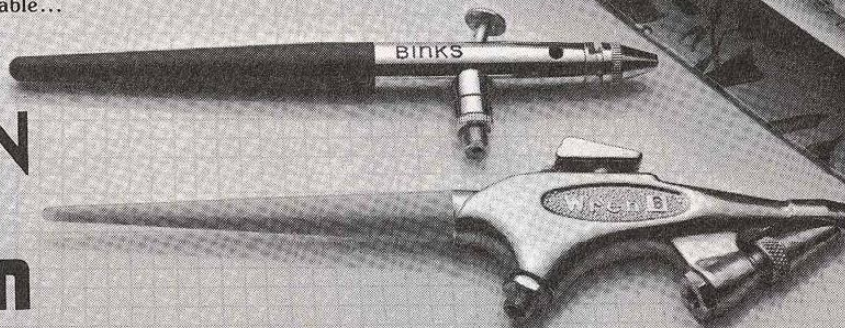
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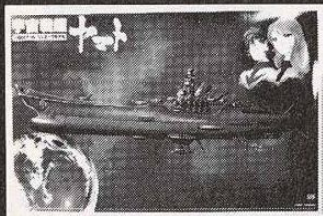


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BUTLER'S RANGERS, TORIES, AMERICAN REVOLUTION

BY R. J. STAFFORD
ARTWORK BY THE AUTHOR

ONE OF THE most notorious units of the American Revolution was Butler's Rangers. In a war that pitted brother against brother this corps perhaps epitomized the savagery of the frontier war.

On September 15, 1774, orders were issued to form a Loyalist regiment consisting of eight companies. Two companies were to be made up of men familiar with Indian ways and language. Major (later Colonel) John Butler enlisted Tory refugees from the Tryon County area of New York state along the Mohawk River. As assistant to Sir William Johnson, British commissioner for Indian affairs, Butler inherited Johnson's prestige and was favored among the Indians. Fluent in the language, he had built a good relationship with the Iroquis. Butler's son, Walter N. Butler, who was perhaps his greatest personal liability, became a captain in the Rangers.

Each company was to consist of a captain, a lieutenant, three sergeants, three corporals, and fifty privates. The orders called for the Rangers to provide their own firearms, but many had to be equipped with arms from Fort Niagara, which served as their home base. The companies ranged all over the northern wilderness, and although units were present in many actions — including the battles of Oriskany and Newtown — the Rangers were at their best when they employed hit-and-run tactics.

Their two most famous (or notorious) attacks were raids on the Wyoming Valley settlements in northeastern Pennsylvania and on Cherry Valley, a town

in east central New York. The so-called Wyoming Valley massacre was, in reality, a daring, well-planned raid led by John Butler on July 3-6, 1778. Of over 450 American militia decoyed into an ambush, 300 were killed, with the loss of only 11 Indians and Tories.

On November 11, 1778, Cherry Valley was a different story. Led by Walter Butler and Indian chieftain Joseph Brant, this was indeed a massacre. With the exception of the fortified home of Colonel Ichabod Alden, Cherry Valley was destroyed. American casualties included women and children, and the prisoners were herded west, some men naked in bitter cold and snow.

As a result of the Wyoming and Cherry Valley disasters, in 1779 General George Washington dispatched Major General John Sullivan to destroy the power of the Iroquois in Pennsylvania and New York. Burning Indian villages and crops, Sullivan's expedition reduced the once-proud Iroquois to refugees crowding Fort Niagara.

Without the aid and shelter of the Indians, Butler's Rangers lost much of their effectiveness. Although the unit served in the Schoharie campaign of 1780 and fought at Johnstown in 1781, the large raids were over. Detachments from Detroit operated in the Ohio Valley as far south as Kentucky, while other units kept active in the area between Pittsburgh and Wheeling.

On October 31, 1781, Walter Butler was shot dead by Continental troops during an unsuccessful raid on the Mohawk Valley. His father, John Butler, settled in Canada, where he died in 1796.

According to Charles Lefferts, Butler's Rangers were "clothed in dark green waistcoats, scarlet facing, black leather caps with a brass plate, buff cross belts, and leather overalls." However, as in any independent unit, clothing varied considerably, frequently taking on Indian characteristics.

The unit was disbanded in June 1784 but lives on in many reenactment societies.

FSM

REFERENCES

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- *Military Uniforms in America*, The Company of Military Historians.



Meet Rod Stafford

Rod Stafford lives in Rochester, New York, with his son and wife Carol, who, he reports, "also serves as my editor, critic, and sometimes my conscience." He graduated in 1976 from the Rochester Institute of Technology with a degree in advertising design, and is a full-time illustrator-designer for Eastman Kodak.

Rod also runs a free-lance art service in his spare time, coaches Pop Warner football in the fall, and, he told FSM, "I ski every chance I get in the winter, and my true love, in the summer, is skydiving! Nothing like seeing New York from a mile or so up while coming on down."

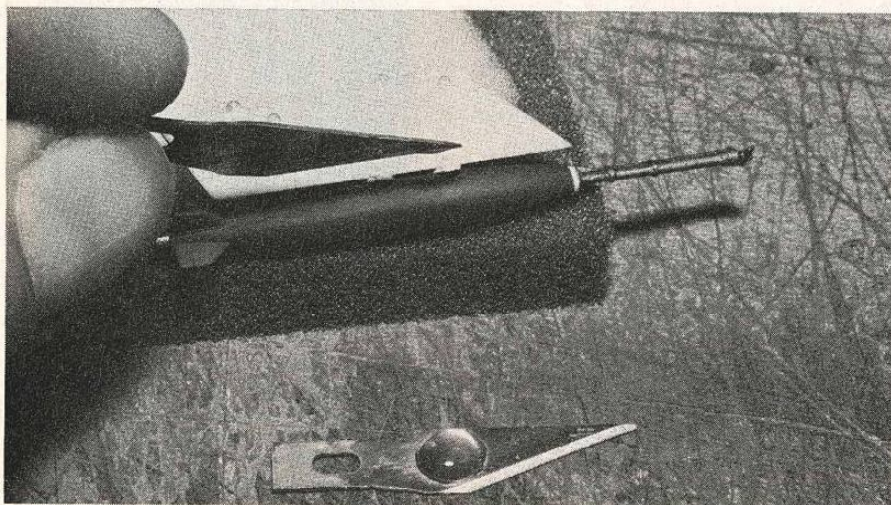
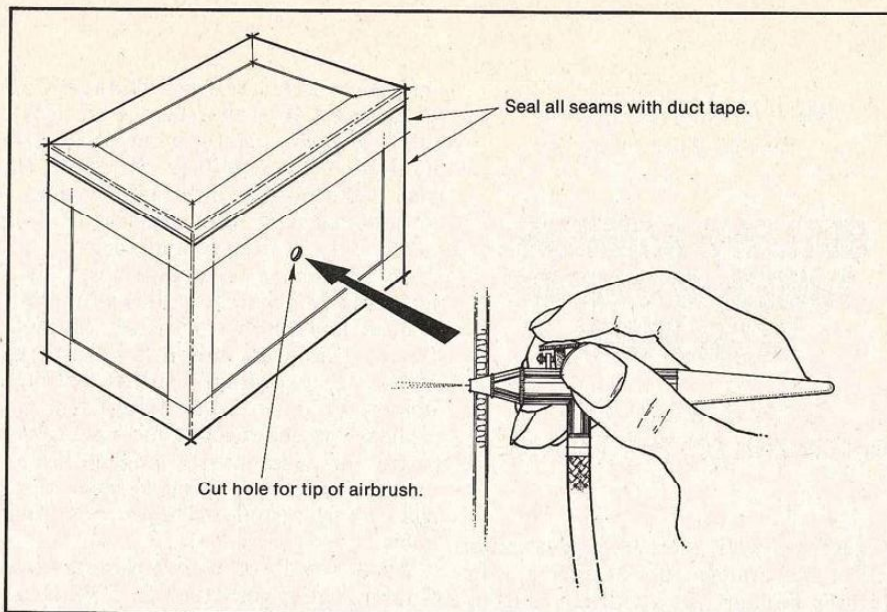
He has won awards at military miniature shows on the East Coast for his miniatures, which he sculpts and paints, and for his illustrations. He added, "When not doing any of the above I can be found reading a history book; usually pre-World War I — before machines took over."

Would you like to share information on a useful tool or technique with other FSM readers? Send a brief description of the tool or technique and a black-and-white photo or a pencil sketch to FSM Tips, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233. Please enclose a stamped, self-addressed envelope for return of photos. Tips are paid for upon publication.

Antipollution device. Here's an inexpensive and effective way to cut down on workshop air pollution. Select a medium-size box, preferably with a separate lid rather than flaps, and seal the top and all seams with duct tape. Cut a small hole just large enough to accept the nozzle of your airbrush.

When you blow thinner through your airbrush to clean it, blow it into the box, then tape over the hole. After the painting session, take the box outdoors, uncover the hole, and let the fumes out. Keep flames and smoking materials away from the box.

David Hamilton



Recycled blades. Here's another use for recycled knife blades — use them as a palette for super glues. Place a drop of super glue on the side of a blade and transfer tiny amounts of adhesive with a pin, wire, or knife blade edge to the parts being assembled. This allows more precise application of glue than the original containers.

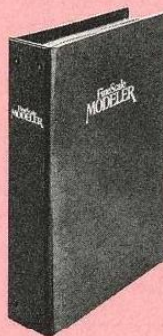
Alan Ernat

Brush cleaner. Don't throw away small paintbrushes clogged with dried enamel paint. Just dip them in IPS Weld-On #3 plastic cement and wipe them on a cloth. After repeating the process a few times, the paint should peel off completely without damaging the bristles.

David Krakow

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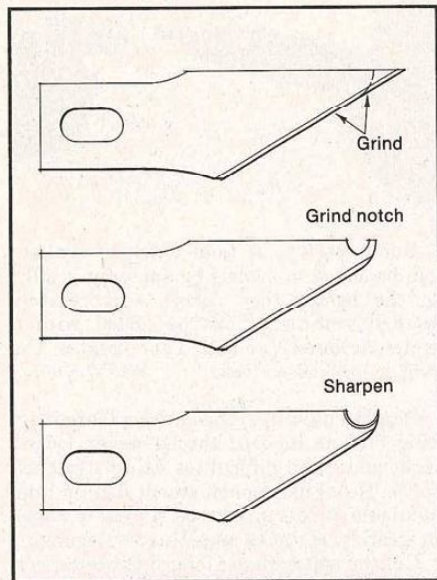
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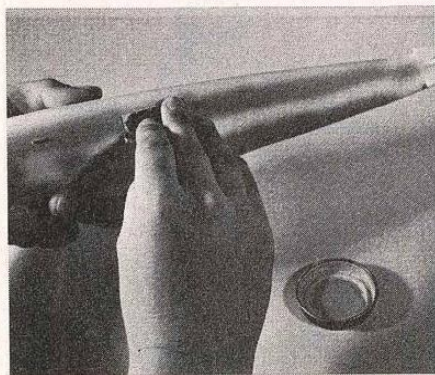
most thinners take out the natural oils in the hairs, a soap-based product as a final rinse is ideal. I follow the bubble liquid with a little saliva and form a point with my fingertips. The bubble liquid is also a good final rinse for airbrushes.

William L. Hogan



Homemade scribe. A styrene scribe can easily be made from old, dull No. 11 X-acto blades. First, grind down the cutting edge and tip. Next, grind a small notch in the top of the blade and sharpen the whole edge. The blade can be resharpened by repeated grinding.

Seth L. Jones



Disposable palettes. Food jar lids make excellent throwaway palettes for mixing small amounts of paint, holding water for sanding, or holding thinner for cleaning brushes. After they have served their purpose on their jars, run the lids through a cycle on the upper rack of the dishwasher and they're ready to use.

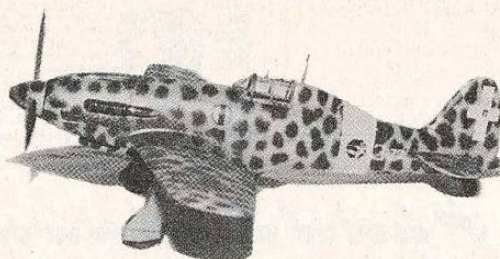
D. H. Minton

Lead wool. I use lead wool to add weight to model aircraft with tricycle landing gear. It molds and packs nicely into the available space and can be used a pinch at a time to get the right amount. It can be held in place with white glue, super glue, or epoxy and can be found at plumbing suppliers or large hardware stores.

Tom Hitchcock

Unbreakable, unbendable antennas. Most modelers make aerials for their armored vehicles from stretched sprue or

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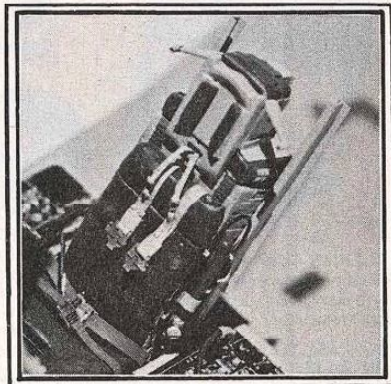
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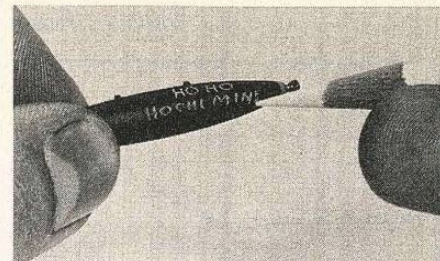
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wire, but these can be accidentally bent or broken in handling. Next time, try using bristles from an old nylon paintbrush. They are naturally tapered, can be cut to size, and won't bend or break.

Ken Dickey



Bomb graffiti. A final touch of realism can be added to models by applying graffiti to the bombs they carry. Appropriately worded sentiments can be added with a white "colored" pencil. This creates the proper chalked-on look.

Will Reynolds

Rigging biplanes. I've always feared rigging biplane models; thread never looked right and I had difficulties using stretched sprue. Now I use monofilament fishing line, available at sporting goods stores. It comes in a variety of thicknesses, rated by strength.

Cut the approximate length of the section needed and attach one end with super glue. After the first end has set, repeat the process at the other end. If there is any sag, tighten it up by passing a burning incense stick near it. The rapid heating and cooling of the line brings it taut.

Matthew McCarthy

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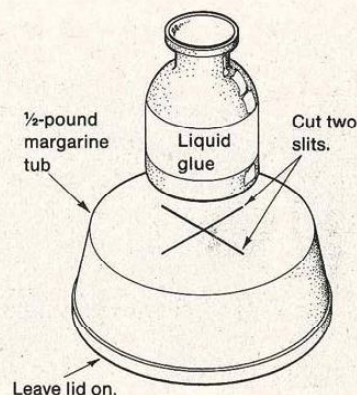
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Glue bottle holder. Here's a spill-proof holder for liquid cement bottles. I made mine from an empty 1/2-pound soft margarine tub by cutting a cross in the bottom. Press the bottle through the cuts. Leave the lid on to keep any drops from harming your work surface.

Bob Tiberio

Masking canopies. Canopy framing can be masked with Formaline graphic tape, crepe style. This tape conforms well to curves and corners. Look for it at art supply stores.

Dennis Murphy

Split shot weights. I drop a couple of split shot fishing weights in bottles of modeling paint. When I shake the bottle, the weights help break up the heavy pigments at the bottom.

Bob Raw

Wicker seats. Many World War One aircraft had wicker seats for the crew members; they were lighter than solid wood or metal. Wicker seats can be simulated by making them from fine brass screen using the pattern above. Curl the seat back by bending the screen over the proper size

dowel, then fold the seat and glue with super glue or epoxy.

After the glue has set, run a bead of white glue or epoxy around the edges to simulate the cane framework. Add stretched spruce legs and paint.

Joe Gianfrancesco

FSM

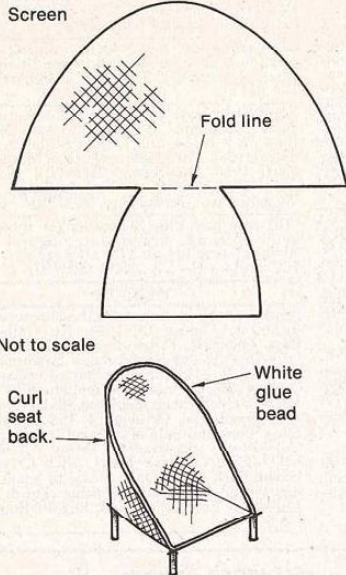
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EVENTS

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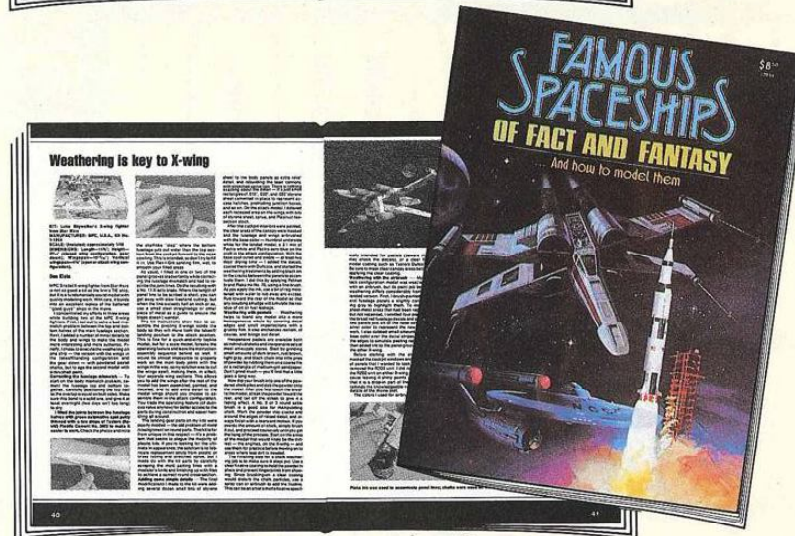
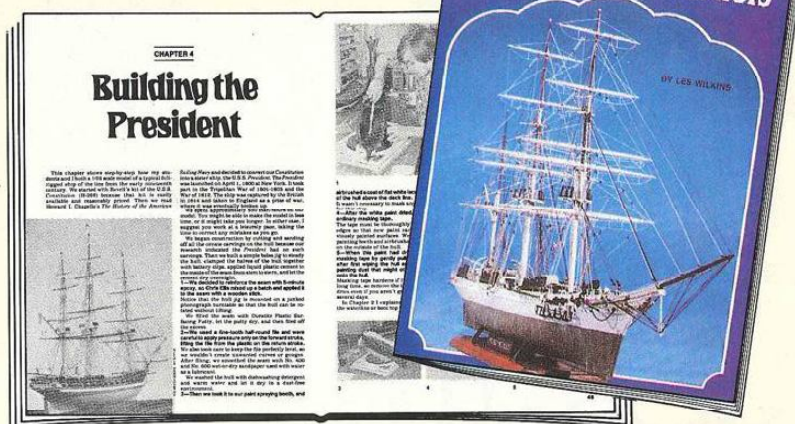
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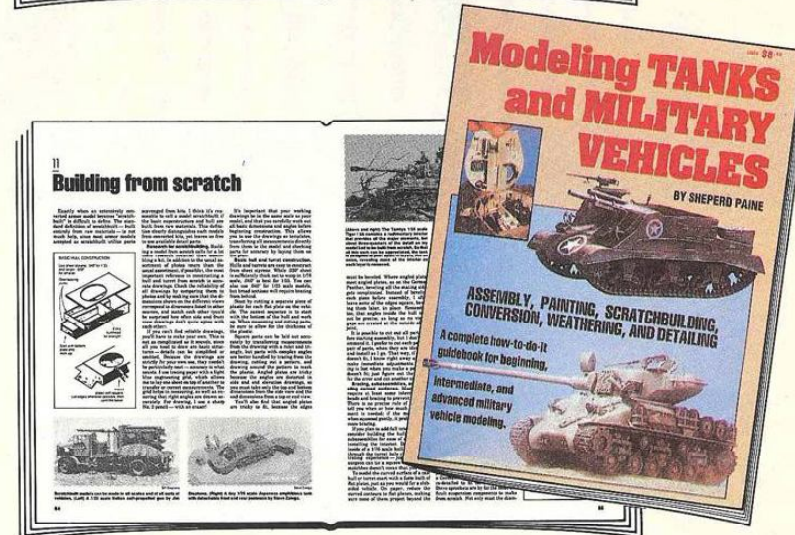


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